PRINT: ISSN 0972-0073 ONLINE: ISSN 2456-6802
Anthropologist, 18(2): 433-446 (2014)
DOI: 10.31901/24566802.2014/18.02.19

The Evaluation of the Developed Differentiation Approach: Students' Achievements and Opinions

Esra Altintas[1] and Ahmet S. Ozdemir[2]

Faculty of Ataturk Education, Marmara University, Istanbul, 34722, Turkey
[1]Telephone: +905336996091,
E-mail: [1]<hoca_kafkas@hotmail.com>, [2]<aso23@hotmail.com>

KEYWORDS Giftedness. Education. Differentiation Approach. View of Student

ABSTRACT The purpose of this paper is to analyze the effect of developed differentiated approach on the achievements of both gifted and non-gifted students and to evaluate the differentiated approach in terms of students' opinions. In this paper, from the mixed method types, "descriptive design" was used. It was concluded that the developed differentiated approach increased the achievement of the students. Also, the students have the idea that the activities made in the scope of research developed their mathematical abilities, became entertaining, instructive and held students responsible about self-learning. Students want to make the activities based on developed differentiated approach for the other subjects of mathematics and in the other lessons. Thanks to the studies made, students stated that they learned many new things, their mathematical and social abilities developed and they reinforced the subjects they learned.

INTRODUCTION

Every child is a value and each child has a right to improve himself/herself in accordance with his/her skills. Children and young people should not be forced to get into certain stereotypes. Their right to have education in accordance with their talents should not be taken away from their hands and it should not be forgotten that all the children whether their intelligence level is high, medium or low have a right to carry on a happy and satisfactory life (Tuzunak 2002). Usiskin (2000) was the first person who referred to 'improving students' skills to more advanced levels'. The core of being gifted can be improved in suitable circumstances. However, these kinds of circumstances should be created (Karp 2011).

Consciously selected stimulants, tools and equipments, consciously organized teaching environments and activities which will be presented to the gifted students will support these children in a healthy way and enable them to use their own capacities at the highest level (MEGEP 2007).

The general objective of an enrichment method is to increase the quality and level of learning experiences for all students in any and every part of curriculum (Renzulli and Reis 2008a). The basic objective of enrichment is to provide independent and effective learning instead of dependent and passive learning (Renzulli and Reis 2008b). Enrichment has a structure which encompasses all children regardless their level of abilities. Not only gifted children but also all the children take advantage of this application (MEGEP 2007).

Differentiation can be defined through the target audience and their needs, interests and abilities; the content and attainments of the teaching subject; how the pedagogy will be use to teach content, attainments and both and where the teaching will be carried out in order to apply curriculum effectively (Kaplan 2009). Differentiation encompasses teacher's effort to address the different students in the classroom. Differentiation means making teaching suitable for fulfilling the individual needs (Tomlinson 2000).

Multiple-intelligences approach is used in establishing new schools, defining individual differences, planning and developing curriculum and evaluating educational strategies. It is widely used in terms of its practicability to various students, subject areas and grade levels (Van Tassel Baska and Brown 2009).

Purdue model is an enrichment model designed for gifted students and it has three stages.

Stage-1 is used as a basis for teaching basic thinking skills like fluency, flexibility, originality, imagination and asking questions.

Stage 2 is used for teaching more complex thinking strategies like logical inference, critical thinking and creative problem solving.

Stage-3 includes independent, individual learning and project activities for starting early

development of children intended for creative production in adulthood (Feldhusen and Kolloff 1986).

The students are grouped in Turkey within the scope of recognizing individual talents (RIT) program which is applied in Science and Art Centres according to their individual skills by considering the capacities of students with the observations and feedbacks obtained during compliance and support training. In order for students to be able to recognize their own skills, programs which elicit their creativity based on academic knowledge and about disciplines for their individual differences are prepared. Learning environments are equipped with modern educational tools and equipments which are supporting creativity. The programs are student-centred and interdisciplinary (URL-1). Science and Art Centres are the places where gifted students are educated. These schools aim to develop the talents of gifted students (Tusside 2009).

Project-based teaching approach including many methods takes students into centre and enables them to acquire information, solve problems, connect relations with real life situations and learn by doing and experience. This learning approach at the same time provides students to study in corporation, process–based and interdisciplinary (Atici and Polat 2010).

The purpose of this paper is to evaluate a differentiation approach which has recently developed for the mathematical education of gifted middle school students in terms of student satisfaction by looking at the effects of this model on the achievements of both gifted and non-gifted students. In addition to that it is to determine the effects of the approach on students' achievement by comparing this developed model with the lessons conducted within the scope of both Purdue model and Recognizing Individual Talents Program.

The paper is important in terms of designing a differentiation approach for gifted students to use their existing potentials in the most effective way in mathematics lessons, for providing them to be able improve their achievement levels also by evaluating in terms of student satisfaction and analyzing the effects of the developed approach on both gifted and non-gifted students and setting the effectiveness of the approach by searching the position of approach against the lessons conducted through differentiation way developed as a part of a program and a model.

In this paper which was implemented to middle school gifted and non-gifted students, the answers of the following sub-questions were searched by moving from the problem that 'Is there an effect of differentiation approach developed for the mathematical teaching of middle school gifted students on the achievements of gifted and non-gifted students?'

Sub-problems in the Dimension of Comparing Lessons Conducted with the Activities Based on Developed Differentiation Approach with Lessons Conducted with the Activities within the Scope of the Related subjects in National Education Curriculum and with Activities as a Part of Differentiation within the Scope of RIT Program

1. Is there a significant difference between the pre-test results (current-enriched-general) and post-test results (current-enriched-general) of the gifted and non-gifted students in control and experimental groups?

Sub-problems Concerning with the comparison between the Developed Differentiation Approach and Purdue Model

1. Is there a significant difference between the achievement pre-test results (general) and achievement post-test results (general) of the gifted and non-gifted students in control and experimental groups?

Sub-problems About the Opinions of Students Participating in the Study on the Differentiation Approach

1. What are the opinions of students on the activities carried out within the scope of this study?
2. What are the opinions of students on using these activities with other mathematical subjects?
3. What are the opinions of students on using these activities with other lessons other than mathematics?
4. What are the opinions of students on the benefits of projects presented within the scope of this research?
5. What are the opinions of students on the comparison between the lessons that they

conducted before the study and the lessons conducted by using activities within the scope of this study?

6. What are the opinions of students on the advantages and disadvantages of studies carried out within the scope of this research?

METHODOLOGY

The Model of the Research

In this paper, pre-test post-test with control group model was used in accordance with the quantitative research methods. In addition to that content analysis was used among qualitative research methods. In this paper, 'explanatory design' was used among mixed method kinds as being both qualitative and quantitative method.

Universe, Sample and Study Group

In this study which was conducted in the fall semester of 2012-2013 academic years, the universe within the scope of quantitative research was composed of gifted and non-gifted 5^{th},6^{th} and 7^{th} grade students in the middle schools in Atasehir, Maltepe and Cekmekoy districts of Istanbul and the sample was composed of 68 gifted students and 144 non-gifted 5^{th}, 6^{th} and 7^{th} grade students in total who were studying in two public middle schools and a special school in Atasehir, Maltepe and Cekmekoy districts of Istanbul. The study group within the scope of qualitative study was composed of 104 students (experimental group students in each practice). In this study, adequate sampling and purposeful sampling were used as a part of qualitative sampling and easily accessible sampling among purposeful sampling was used as a part of quantitative sampling. The reason why the researchers made researches in private school is the presence of gifted students. For looking at the effect of the differentiation approach on both gifted and nongifted students, the researchers studied with both gifted and nongifted students. Also the accessibility to the schools and recognizing the teachers became efficient for choosing the schools.

Data Collection Instruments

Data collection instruments used within the scope of this paper; Mathematical Achievement Test, Multiple Intelligence Inventory and Opinion Form for Students. Teaching practices were carried out on different subjects with different grade levels. (5^{th}, 6^{th} and 7^{th} grades). Achievement pre-tests and achievement post-tests were composed of different but parallel questions. Six teaching practices were carried out on subjects such as 'Ratio-Proportion', 'Tables and Graphics' and 'The Arithmetic of Conscious Consumption' in addition to that 12 achievement tests were prepared. At the phase of comparing Purdue model with developed differentiation approach, achievement test only consisted of questions which were testing attainments of current grade level. However, the achievement test which was used at the phase of comparing this approach with the activities related the subjects of National Education Curriculum and activities based on RIT program, consisted of questions which were testing both attainments of current grade level and attainments of the upper grade level related with the subject. In Purdue model the attainments are enriched deeply unlike other models. Since this case required a new question category in addition to questions concerning current grade level and upper grade level, it was not used within the scope of this paper but included as a suggestion.

'Multiple Intelligences Inventory Evaluation Profile' which was prepared by Saban (2005) was used in the paper. The inventory was in likert type and consisted of ten sections and 80 items. 'Multiple Intelligences Inventory Evaluation Profile' which was provided by Saban (2005) was used for the evaluation of the scores.

The Opinion Form for Students was composed of 6 open-ended questions. The questions were prepared by the researcher and an expert in accordance with the purpose of the paper. After each teaching practice, the form was filled by 104 students and then analyzed in order to determine the opinions of students concerning the teaching practice.

Research and Implementation Process

Before the practice phase, teachers and students were informed about the studies. Before each teaching practice, achievement pre-test was conducted to students and control and experimental groups were set. Students were grouped according to their dominant intelligence domains by conducting multiple-intelligence inventory with only experimental group students.

Six teaching practices were carried out within the scope of this paper and two of them including a comparison between developed differentiation approach and Purdue model, three practices about comparing with lessons carried out by using activities stated in National Educational Curriculum and in one practice it was about a comparison between the model and a lesson carried out as a part of differentiation studies practiced in a public school. After the implementation, achievement post-test was conducted to all students. Besides, after each practice, an opinion form was conducted to experimental group students.

Teaching Material

In terms of developing a curriculum differentiation approach, in a topic which was selected from National Education curriculum, some differences were made in content, process, product and learning environment. While making these differences, content, process, product and learning environment dimensions were defined as in the following: *Content*= Enriched Attainments + Theme (Topic in National Education Curriculum and content), *Process*= Determination of Students' Multiple Intelligence Domains + Teachers' Strategies + Basic Skills + Research Skills + Production Skills, *Product*=Products, *Learning Environment*=Creative Thinking +Multiple Intelligence Different Disciplines + Project-based

Since enriched attainments were important in terms of determining the topic, they were dealt with theme in the content dimension. Since the determination of multiple intelligences of students would affect strategies of teachers and projects of students, it was dealt with in process dimension. Current grade level's attainments were given in Theme part. 'The Determination of Multiple Intelligences of Students', 'Enriched Attainments' and 'Strategies of Teachers' were added in the differentiation approach which was developed as an addition to the theme, basic skills, research skills, productive skills and products stated in the lesson plan of Kaplan model.

The Multiple intelligences of students were determined and the results obtained were used in determining the project topics of students, selection of teacher's strategies and in determining what to consider for motivating students. During the enrichment of the attainments phase, enrichment was made by selecting attainments from an upper grade. In using strategies, strategies stated at the second dimension of the Williams model had been considered and some of them were skipped and new strategies were added. These are; intriguing question, property listings, analogy, visualization, interdisciplinary approach, depending on uncertainty, intuitive expression, evaluation of cases, organized random research, research skill, creative reading skills, creative listening skills, discrimination, topic relation, historical perspective, change samples, contradiction, creative writing skills, creative process study.

While designing differentiation model, the models of Williams, Maker, Kaplan, Autonomous Learner, Maker Matrix and multiple intelligences of Gardner were used. Among the 5 problem types stated within the scope of Maker matrix model, Type III and Type V were especially emphasized. Project topics were presented to students by determining the outlines of the topics. Students were responsible from all stages in projects.

In the developed differentiation approach, both vertical and horizontal enrichment were made. For this, enrichments were made both in attainment and activity dimensions. Within the scope of the designed differentiation approach, it was examined that the strategies in Williams' model fit to which process changes in Maker model. The purpose here is to determine process changes that will be done in curriculum via the strategies that will be used according to subjects. Students developed some products through strategies. These are evaluated by their teachers and peers through listening. Students who are making the presentations are subjected to peer and teacher evaluation.

During the process phase of the designed model, at the point which requires research skills, that is, especially when students need to prepare projects, 'The Information Process' among the skills which are included within the scope of research skills in the process phase of Kaplan model was entitled as Preparing Project Stages after editing by the researcher and the lecturer. Students were asked to prepare projects by considering these stages. While evaluating projects, an evaluation form was prepared by depending on 'information skills' part of the information process.

Data Analysis

Quantitative Analysis

Statistical analyses were made by collecting achievement pre-post test data which was carried out with gifted and non-gifted students. All the analyses were made in 95 % confidence interval and $p<0.05$ values were accepted as statistically significant. The Item remaining, item discrimination and item-total indices were calculated by conducting item analysis to achievement tests after pilot practice and accepting the significance level as 0.05. In conclusion the final versions of the tests were decided. The reliability of the tests differs between 0.700 and 0.858.

Non-parametric tests were used in less populated classrooms (The number of data is less than 30 (Kalayci 2009; Baydur 2012)) for analyzing the data. In studies where the classrooms were crowded (the number of data is more than 30) descriptive statistics were examined for analyzing the normality of the data and Shapiro-Wilk normality test was used since the number of data was less than 50. In this sense, parametric tests were used for the analyses of the scores that fulfilled the conditions of normality and non-parametric tests were used for the analysis of the score that could not.

Qualitative Analysis

'The Opinion Form for Students' was used in this paper. The data collected through opinion forms were coded and frequency percentage values corresponding to each code were given in tables. In qualitative study, the qualities of credibility, transferability, consistency and sustainability were provided.

RESULTS

Comments and Findings regarding Mathematical Achievement Tests

The Analysis of Public School 1 (6^{th} Grade –Tables and Graphics)

In order to determine control and experimental groups before the implementation, Achievement test was carried out and it was determined that there was not a significant difference between groups according to Mann Whitney U test results (U= 14.00, $p=0.85>0.05$). But from the groups, the one with a smaller mean rank was selected as experimental group (5.83) and the one with a bigger mean rank was selected as the control group (6.20).

Table 1: Mann whitney-u test comparison regarding achievement test scores (general–current–enriched attainment) of gifted students in control and experimental groups before and after implementation

Score	*Group*	*N*	*Mean rank*	*Rank sum*	*U*
G-Pre	C	5	6.20	31.00	14.00
	E	6	5.83	35.00	
G-Post	C	5	3.00	15.00	0.00
	E	6	8.50	51.00	
C-Pre	C	5	6.50	32.50	12.50
	E	6	5.58	33.50	
C-Post	C	5	3.00	15.00	0.00
	E	6	8.50	51.00	
E-Pre	C	5	6.10	30.50	14.50
	E	6	5.92	35.50	
E-Post	C	5	3.00	15.00	0.00
	E	6	8.50	51.00	

While there is not a significant difference between the current attainment scores of gifted students in control and experimental groups before the teaching practice (U=12.50, $p=0.64>0.05$), there is significant difference in favour of experimental group after teaching practice (U=0.00, $p=0.00<0.05$). While there is not a significant difference between the enriched attainment scores of gifted students in control and experimental groups before the teaching practice (U=14.50, $p=0.92>0.05$), there is significant difference in favour of experimental group after teaching practice (U=0.00, $p=0.00<0.05$). While there is not a significant difference between the general scores of gifted students in control and experimental groups before the teaching practice (U=14.00, $p=0.85>0.05$), there is significant difference in favour of experimental group after teaching practice (U=0.00, $p=0.00<0.05$) (see Table 1). When we consider these results, it is seen that there is an increase in the current, enriched attainment and general scores of experimental group students after teaching practice unlike control group students.

Private School Achievement Test Analysis (5^{th} Grade-Tables and Graphics)

Achievement test was carried out in order to determine the control and experimental groups before the implementation and it was determined that there was not a significant difference be-

tween groups according to Mann Whitney U test results (U= 69.00, *p=0.28>0.05*). But from the groups, the one with a smaller mean rank was selected as experimental group (12.31) and the one with a bigger mean rank was selected as the control group (15.57).

Table 2: Mann whitney-u test comparison regarding achievement test scores (general–current–enriched attainment) of gifted students in control and experimental groups before and after implementation

Score	*Group*	*N*	*Mean rank*	*Rank sum*	*U*
G-Pre	C	14	15.57	160.00	69.00
	E	13	12.31	218.00	
G-post	C	14	7.89	110.50	5.50
	E	13	20.58	267.50	
C-Pre	C	14	19.43	272.00	15.00
	E	13	8.15	106.00	
C-Post	C	14	7.50	105.00	0.00
	E	13	21.00	273.00	
E-Pre	C	14	15.07	211.00	76.00
	E	13	12.85	167.00	
E-Post	C	14	10.25	143.50	38.50
	E	13	18.04	234.50	

There is not a significant difference between the enriched attainment (U=76.00, *p=0.45>0.05*) and general (U=69.00, *p=0.28>0.05*) scores of gifted students in control and experimental groups before the teaching practice. There is a significant difference in favour of control group between the current scores (U=15.00, *p=0.00<0.05*) of the groups before teaching practice. However, There is a significant difference in favour of experimental group between the general (U=5.50, *p=0.00<0.05*), current (U=0.00, *p=0.00<0.05*) and enriched (U=38.50, *p=0.01<0.05*) attainment scores of the groups after teaching practice (see Table 2). In this case, there was an increase in general, current and enriched attainment scores of experimental group students in achievement test after teaching practice.

Private School Achievement Test Analysis (5^{th} Grade-Ratio and Proportion)

Achievement test was carried out in order to determine the control and experimental groups before the implementation and it was determined that there was not a significant difference between groups according to Mann Whitney U test results (U=87.50, *p=0.86>0.05*). But from the groups, the one with a smaller mean rank was selected as experimental group (13.73) and the one with a bigger mean rank was selected as the control group (14.25).

Table 3: Mann whitney-u test comparison regarding achievement test scores of gifted students in control and experimental groups before and after implementation

Score	*Group*	*N*	*Mean rank*	*Rank sum*	*U*
Pre-A	C	14	14.25	199.50	87.50
	E	13	13.73	178.50	
Post-A	C	14	7.54	105.50	0.50
	E	13	20.96	272.50	

There is not a significant difference between the pre-achievement scores (U=87.50, p=0.86>0.05) of gifted students in control and experimental groups. But, there is significant difference between the post-achievement scores (U=0.50, p=0.00<0.05) in favour of experimental group (see Table 3). In this case, there was an increase in achievement scores of experimental group students after teaching experience.

According to Wilcoxon signed rank test comparison regarding the achievement test scores of control and experimental group students before and after teaching practice, there is a significant difference in favour of post-test scores between achievement scores of gifted students in control group before and after teaching practice (z=-2.21, *p=0.02<0.05*) and achievement scores of gifted students in experimental group before and after teaching practice (z=-3.18, *p=0.00<0.05*). In this case, there was an increase in achievement scores of both control and experimental groups.

Private School Achievement Test Analysis (6^{th} Grade-Tables and Graphics)

Achievement test was carried out in order to determine the control and experimental groups before the implementation and it was determined that there was not a significant difference between groups according to Mann Whitney U test results (U=102.00, *p=0.66>0.05*). But from the groups, the one with a smaller mean rank was selected as experimental group (14.80), and the one with a bigger mean rank was selected as the control group (16.20).

Tablo 4: Mann whitney-u test comparison regarding achievement test scores of gifted students in control and experimental groups before and after implementation

Score	*Group*	*N*	*Mean rank*	*Rank sum*	*U*
G-Pre	C	15	14.80	222.00	102.00
	E	15	16.20	243.00	
G-Post	C	15	8.00	120.00	0.00
	E	15	23.00	345.00	
C-Pre	C	15	14.20	213.00	93.00
	E	15	16.80	252.00	
C-Post	C	15	10.77	161.50	41.50
	E	15	20.23	303.50	
E-pre	C	15	16.80	252.00	93.00
	E	15	14.20	213.00	
E-Post	C	15	8.00	120.00	0.00
	E	15	23.00	345.00	

There is not a significant difference between general pre-achievement (U=102.00, *p=0.66> 0.05*), current pre-achievement (U=93.00, *p=0.41>0.05*), enriched pre-achievement (U=93.00, *p=0.40>0.05*) scores of gifted students in control and experimental groups. But, there is a significant difference in favour of experimental group between general post-achievement (U=0.00, *p=0.00<0.05*), current post-achievement (U=41.50, *p=0.03<0.05*), enriched post-achievement (U=0.00, *p=0.00<0.05*) scores of gifted students in control and experimental groups (see Table 4).

Public School 2 Achievement Test Analysis (6th Grade-Tables and Graphics)

Achievement test was carried out in order to determine the control and experimental groups before the implementation and it was determined that there was not a significant difference between groups according to independent t-test results ($t_{(58)}$ = 0.84, p=0.40>0.05). But from the groups, the one with a smaller mean rank was selected as experimental group (27.21), and the one with a bigger mean rank was selected as the control group (28.68).

There is not a significant difference between the current pre-achievement (U=435.00, *p=0.84>0.05*) and enriched (U=340.00, *p=0.10>0.05*) pre-achievement scores of non-gifted students in control and experimental groups. However, there is a significant difference in favour of experimental group between the current (U=1.00, *p=0.00<0.05*) and enriched (U=0.50, *p=0.01<0.05*) achievement scores after teaching practice (see Table 5).

Table 5: Mann whitney-u test comparison regarding the achievement test scores of non-gifted students in control and experimental groups

Score	*Group*	*N*	*Mean rank*	*Rank sum*	*U*
C-Pre	C	32	30.09	963.00	435.00
	E	28	30.96	867.00	
C- Post	C	32	16.53	529.00	1.00
	E	28	46.46	1301.0	
E-Pre	C	32	33.88	1084.0	340.00
	E	28	26.64	746.00	
E-Post	C	32	16.52	528.50	0.50
	E	28	46.48	1301.5	

Table 6: Independent group t-test comparison regarding the achievement test scores of non-gifted students in control and experimental groups

Score	*G*	*N*	*Mean*	*SS*	*sd*	*T*
G-Pre	C	32	28.68	5.57	58	0.84
	E	28	27.21	7.86		
G-Post	C	32	27.00	7.24	58	-23.26
	E	28	67.53	6.09		

There is not a significant difference between general pre-achievement scores ($t_{(58)}$ =0.84, *p=0.40>0.05*) of control and experimental groups. However, there is a significant difference in favour of experimental group between the general post –achievement scores ($t_{(58)}$, = *23.26, p=0.00<0.05*) of control and experimental groups (see Table 6).

Public School 2 Achievement Test Analysis (7th Grade –The Arithmetic of Conscious Consuming)

Achievement test was carried out in order to determine the control and experimental groups before the implementation and it was determined that there was not a significant difference between groups according to Mann Whitney U test results (U=837.00, *p=0.68>0.05*). This time unlike the other practices, in accordance with the opinions of classroom teacher the one with a bigger mean rank was selected as experimental group (43.57) and the one with a smaller mean rank was selected as the control group (41.43). The class which did not have a good project background was determined as experimental group with teacher's opinion.

Table 7: Independent group t-test comparison regarding the achievement test scores of non-gifted students in control and experimental groups

Score	*G*	*N*	*Mean*	*SS*	*sd*	*T*
A-Post	C	42	25.33	8.24	82	-17.82
	E	42	55.78	7.38		

There is a significant difference in favour of experimental group between post-achievement ($t_{(82),} = -17.82$, $p=0.00<0.05$) scores of control and experimental groups (see Table 7).

Table 8: Wilcoxon signed ranked test comparison regarding achievement test scores of non-gifted students in control and experimental groups

G	*Score*	*Post-test/ Pre-test*	*N*	*Rank Mean*	*Rank Sum.*	*z*
C	A-post/ A-Pre	Negative	8	12.94	103.5	-3.88
		Positive	30	21.25	637.5	
		Equal	4			

There is a significant difference in favour of post-test between achievement test scores of non-gifted students in control group before and after teaching practice ($z=-3.88$, $p=0.00<0.05$) according to Wilcoxon signed ranked test regarding achievement test scores of non-gifted students in control group (see Table 8). According to these results, there was an increase in the achievements of the control group students.

Opinion Form 'for Students'

The study was carried out in 3 different schools. There are 6 open-ended questions in this form. This form was filled by 6 persons in the public school1, 28 persons in private school and 70 persons in public school 2 consequently 104 persons in total.

Table 9: The distribution of students' responses according to codes regarding the question as 'how did you find the activities carried out within the scope of this study?'

Q 1	*F*	*%*
Improving Social and maths Skills	85	82
Enjoyable	100	96
Didactic	98	94
Making Individuals Responsible from their Learning	82	79

The participating students think that the activities used in the study are improving social and mathematical skills, enjoyable, didactic and making individuals responsible from their own learning (see Table 9).

"I think that these activities enable us to develop socially and mathematically. Also, I think that it will help me to prepare myself for preparing project."

Table 10: The distribution of students' responses according to codes regarding the question as 'do you want to use these kinds of activities with other topics in mathematics?'

	Yes, I do		*No, I do not*	
	f	*%*	*F*	*%*
Q2	104	100	-	-

Students want to use these activities carried out in this study with other topics in Mathematics. But some students think that using these kinds of activities periodically will be more useful (see Table 10).

"I want to be made these kinds of activities in the other subjects of mathematics. Because we learn many things while searching the subjects."

Table 11: The distribution of students' responses according to codes regarding the question as 'do you want to use these kinds of activities with other lessons?'

	Yes, I do		*No, I do not*	
	f	*%*	*F*	*%*
Q3	104	100	-	-

Students want to use these activities carried out in this study also with other lessons (see Table 11). However, some students think that using these activities periodically instead of using them constantly will be more convenient.

"Yes, I do. While making these kinds of activities I learn the subjects well. Also, because being enjoyable, I remember the subjects well and the subject remain in my mind."

Table 12: The distribution of students' responses according to codes regarding the question as 'what are the benefits of these projects to you?'

Q4	*F*	*%*
Learning New Things	104	100
Learning to Make Presentation	95	91
Developing Social and Maths Skills	92	89
Consolidation of Learnt Topics	89	86

Students expressed that with the help of activities they learnt new things and how to make presentation, their maths and socials skills improved and they had opportunities to consolidate what they had learnt (see Table 12).

"These projects contributed me socially and mathematically. Also it enabled me to learn the differences between graphics easily."

Table 13: The distribution of students' responses according to codes regarding the question as 'can you compare these lessons carried out with activities used within the scope of this activity with your previous ones?'

Q5	*F*	*%*
Outstanding	98	94
Didactic	95	91
Enjoyable	100	96
Social Skill	96	92
Academic Skills	98	94

Students expressed that the lessons which were carried out with activities used in this study were more outstanding, enjoyable, and didactic than the previous lessons and they helped them to gain both academic and social skills (see Table 13).

"*The lesson draw attention of myself. Clearly, I didn't listen the other lessons in such an attention."*

Table 14: The distribution of students' responses according to codes regarding the question as 'what are the advantages and disadvantages of the studies conducted within the scope of this research?'

	Codes		*f*	*%*
Q6	*Adv*	*Positive Motivation*	95	91
		Acquiring Social Skills	100	96
		Acquiring Academic Skills	101	97
		Being Responsible from his/her own Learning	98	94
	Disadv	Time	5	4

Students expressed many advantages of the study. These advantages are providing positive motivation, acquiring social and academic skills and making students responsible from their own learning. Besides, little students claimed time factor as a disadvantage (see Table 14).

"*Advantages: It develops my imagination, pratic intelligent. It enables fast education and to think. Disadvantages: There isn't."*

DISCUSSION

There was a significant increase in the achievement scores after teaching practice of experimental group students in which the activities designed for a differentiation approach developed within the scope of this study were used in comparison with control group students in which the activities designed for National Education Curriculum and RIT Program were used.

In the studies of Ozerbas (2011), Kurtulus (2012) and Kok (2012), it was observed that teaching practices which is based on creative thinking and in addition to creativity making differentiation studies by depending on a teaching model increased the achievements of students. In the studies of Dag and Durdu (2011), Poonpon (2011), Karacalli (2011), Denis Celiker (2012) and Kasarci (2013), Krajcik and Czerniak (2014), Varisoglu and Sevim (2014), it was observed that there was an increase in students' achievements, positive attitudes towards the lesson and the retention of the lesson in practices which was depending on project-based teaching approach. In the studies of Tabuk (2009), Kayiran (2009), Bas and Beyhan (2010), it was concluded that using multiple intelligence approach in project-based teaching and cooperative learning increased students' achievements. According to the paper of Adodo and Agbayewa (2011), it was concluded that skill grouping or homogenous grouping was effective on academic achievements of gifted students. Altinsoy (2011), Uzunoz and Akbas (2011), Yalmanci and Gozum (2013) found that teaching with multiple intelligence theory increased academic achievements of students.

Also, in the studies of Luehmann (2009), Fakolade and Adeniyi (2010), Al-Zoub (2011), Singh (2013), it was specified that teaching with enrichment activities increased students' achievement and in the studies of Kadum-Bošnjak and Buršic-Kri•anac (2010), Reis et al. (2011) and Gorman (2011), it was appeared that curriculum differentiation studies increased students' achievements.

When looked at the results of comparing the differentiation approach with Purdue model, there was an increase in the achievements of both control and experimental groups. This is because of the fact that the teaching was based on Purdue model in control group and it was based on the developed differentiation model in

experimental group. Purdue model is the one which was developed for gifted students.

In the studies of Ozerbas (2011), Kurtulus (2012) and Kok (2012), it was observed that teaching practices which is based on creative thinking and in addition to creativity making differentiation studies by depending on a teaching model increased the achievements of students. Dag and Durdu (2011), Poonpon (2011), Karacalli (2011), Denis Celiker (2012) Kasarci (2013) found that there was an increase in students' achievements in practices which was depending on project-based teaching approach. In the studies of Tabuk (2009), Kayiran (2009), Bas and Beyhan (2010), it was concluded that using multiple intelligence approach in project-based teaching and cooperative learning increased students' achievements. It was concluded in the paper of Adodo and Agbayewa (2011) that skill groping or homogenous grouping was effective on academic achievements of gifted students. When studies based on Purdue model was analyzed, it was appeared that the lessons which were carried out by using the activities developed according to Purdue 3-stage enrichment model increased students' achievements in the studies of Altintas and Ozdemir (2009).

In the studies of Basbay (2005), Sirin (2010), Elmaci (2010), Gozum (2011), Altinsoy (2011), Uzunoz and Akbas (2011), Yalmanci and Gozum (2013), it was found that teaching with multiple intelligence theory increased academic achievements of students. It was identified that project based teaching increased students' achievements in the studies of Sert (2008), Unlu (2008), Altintas and Ozdemir (2010), Tertemiz (2012), Baran and Maskan (2013), Krajcik and Czerniak (2014), Varisoglu and Sevim (2014). In the studies of Luehmann (2009), Fakolade and Adeniyi (2010), Al-Zoub (2011), Singh (2013), it was specified that teaching with enrichment activities increased students' achievement. Also It was appeared that curriculum differentiation studies increased students' achievements as it was seen in the studies of Kadum-Bošnjak ve Buršic-Kri•anac (2010), Reis et al. (2011), Gorman (2011).

The students participating in the study think that the activities conducted in this study develop social and mathematical skills, are enjoyable, didactic and make students responsible from their own learning. Students want to use these activities with different topics in Mathematics and with other lessons other than Mathematics. Students express that with the help of these activities they have opportunities to learn new things and how to make a presentation, their social and mathematical skills are developed and they have chances to consolidate what they learnt. Students state that the lessons conducted by using the activities used in this study are more outstanding, enjoyable than the other lessons and they help them to acquire both social and academic skills.

In the studies of Ozerbas (2011), Kurtulus (2012), Kok (2012), it was observed that teaching practices which is based on creative thinking and in addition to creativity making differentiation studies by depending on a teaching model increased the achievements and creative and spatial thinking skills of students in creative thinking, academic achievements, skills of scientific process, spatial thinking, problem solving skills and positive attitudes towards lesson. In the studies of Dag ve Durdu (2011), Poonpon (2011), Karacalli (2011), Denis Celiker (2012), Kasarci (2013), it was observed that there was an increase in students' creative thinking skills, problem solving skills, levels of taking academic risks, achievements, positive attitudes towards the lesson and the retention of the lesson in practices which was depending on project-based teaching approach. It was determined in the studies of Papastergiou (2005), Kurak (2009), Sadioglu et al. (2012), Cetin and Sengezer (2013) that the practices which were depending on project-based teaching approaches provided students to learn the steps of preparing a project, contributed to learning by doing and experiencing, effected positively to the development of cooperation and studying with the group skills, enabled them to socialize, provided teacher guidance during project, improved the sense of responsibility, revealed the abilities and skills of the students, made lessons enjoyable, relieved lessons from being monotonous and teacher-centred, made students active, made lessons more understandable and increased self-confidence and motivation.

Tabuk (2009), Kayiran (2009), Bas and Beyhan (2010) stated that using multiple intelligence approach in project-based teaching and cooperative learning increased students' achievements and positive attitude towards lesson. Sahin (2007) found the result that the practices based on project-based and interdisciplinary approaches presented intense and satisfactory

learning experiences, were very fruitful for the students and students were gained important experiences on peer evaluation cooperative learning and project-based teaching. It was concluded in the paper of Adodo and Agbayewa (2011) that skill groping or homogenous grouping was effective on academic achievements of gifted students and their positive attitudes towards the subject. In the studies of Basbay (2005), Sengul and Oz (2008), Sirin (2010), Elmaci (2010), Gozum (2011), Altinsoy (2011), Uzunoz and Akbas (2011), Gurbuz (2011), Yalmanci and Gozum (2013), it was found that teaching with multiple intelligence theory increased academic achievements of students, positive attitude and interest towards lesson and retention of teaching activities and lessons. It was determined that the practices based on multiple intelligence theory contributed positively to teaching and learning, there was an increase in students' contribution to lessons, provided development in terms of social and individual side, enabled students to enjoy the lessons and made lessons enjoyable and understandable.

It was ascertained in the paper of Demirel et al. (2008) that the practices based on multiple intelligence theory and interdisciplinary approach activate all the students, there was an increase in active participation of the students, students had opportunities to use different skills and abilities during these studies, learning of students became easier, students developed their skill to study cooperatively, increased self confidence of the students, students enjoyed from teaching and learning process so that they developed positive attitudes towards school and lessons, teachers guided students in teaching and learning process, teachers played a role in creating opportunities to reveal students' ideas and appreciating students' ideas, paying attention to their thinking and creativity, guiding them to do research and created environment for them to improve their interrogative skills during this process, made them to have a voice in their own learning by adding students to evaluation process and supporting cooperative learning. Luehmann (2009), Fakolade and Adeniyi (2010), Al-Zoub (2011) found the result that teaching with enrichment activities increased students' achievement. It was appeared in the studies of Kadum-Bošnjak ve Buršic-Kri•anac (2010), Reis et al. (2011), Gorman (2011) that curriculum differentiation studies increased students' achievements.

CONCLUSION

There was a significant increase in the achievement scores after teaching practice of experimental group students in which the activities designed for a differentiation approach developed within the scope of this paper were used in comparison with control group students in which the activities designed for National Education Curriculum and RID Program were used. When looked at the results of comparing the differentiation approach with Purdue model, there was an increase in the achievements of both control and experimental groups. The students participating in the study think that the activities conducted in this study develop social and mathematical skills, are enjoyable, didactic and make students responsible from their own learning. Students want to use these activities with different topics in Mathematics and with other lessons other than Mathematics. Students express that with the help of these activities they have opportunities to learn new things and how to make a presentation, their social and mathematical skills are developed and they have chances to consolidate what they learnt. Students state that the lessons conducted by using the activities used in this study are more outstanding, enjoyable than the other lessons and they help them to acquire both social and academic skills.

RECOMMENDATIONS

The following suggestions are offered as a result of this paper.

1. It is suggested to use the developed differentiation approach with other grade levels in addition to grade levels in this paper, with other topics and with other lessons.
2. Project topics designed according to the developed differentiation approach can be re-designed by considering different process changes and different creativity strategies.
3. It is suggested to use developed differentiation approach periodically in for teachers and students to gain experience.
4. It is suggested to collect data by practicing differentiation method through determining pilot schools nationwide.
5. It is suggested generally to inform all teachers across the country about how they will

guide the process of preparing projects and for teachers to inform their students about how they will prepare projects.

6. There are only current grade level attainments in the achievement test used within the scope of this paper while comparing the lesson conducted with the activities based on the developed differentiation approach and the lesson conducted with activities based on Purdue model. However, because of the developed differentiation approach there should be questions regarding upper grade level's attainments and because of the Purdue Model there should be questions regarding profound attainments.

REFERENCES

Adodo SO, Agbayewa CO 2011. Effect of Homogenous and Heterogeneous Ability Grouping Class Teaching on Student's Interest, Attitude and Achievement in Integrated Science. International Journal of Psychology and Counselling, 3(3): 48-54. From <http://academicjournals.org/article/article1 380364076_Adodo%20and%20Agbayewa.pdf> (Retrieved on 10 October 2013).

Aljughaiman AM, Ayoub AEA 2012. The effect of an enrichment program on developing analytical, creative, and practical abilities of elementary gifted students. *Journal for the Education of the Gifted*, 35(2): 153–174.

Altinsoy AB 2011. Fen ve Teknoloji Dersinde Coklu Zeka Kuramina Dayali Ogretimin Ogrencilerin Basarilarina Etkisi. Master Thesis, Unpublished. Konya: University of Selcuk. From <9 http://tez2.yok.gov.tr/> (Retrieved on 9 December 2013).

Altintas E, Ozdemir AS 2009. March. Purdue modeline dayali matematik etkinligi ile ogretimin ustun yetenekli ogrencilerin basarilarina etkisi. Second National Gifted Children Congress, Congress conducted at the meeting of University of Anadolu, Eskisehir.

Altintas E, Ozdemir AS 2010. August. The effect of teaching with the mathematics activity based on purdue model on the achievement of non-gifted students. International Conference of Mathematical Sciences. Symposium conducted at the meeting of Maltepe University, Istanbul.

Altintas E, Ozdemir AS, Kerpic A 2013.The effect of teaching based on the purdue model on creative thinking skills of students. *Kalem Uluslararasi Egitim ve Insan Bilimleri Dergisi*, 3(4): 187-214.

Al-Zoub SM 2011. The effect of enrichment activities on talented students' achievement. *Modern Journal of Education*, 1(2/3): 1-11.

Atici B, Polat H 2010. Web tasarimi ogretiminde proje tabanli ogrenme yaklasiminin ogrencilerin akademik basarisi ve goruslerine etkisi. *Turkish Journal of Computer and Mathematics Education*, 1(2): 122-132.

Baran M, Maskan A 2013. Examining the Influence of Technology and Project-Supported Thinking Journey on Achievement. The Turkish Online Journal of Educational Technology, 12(2):122-130. From <http://files.eric.ed.gov/fulltext/EJ1015529.pdf> (Retrieved on 5 May 2014).

Bas G, Beyhan O 2010. Effects of multiple intelligences supported project-based learning on students' achievement levels and attitudes towards english lesson. *International Electronic Journal of Elementary Education*, 2(3): 365-385.

Basbay A 2005. Coklu zekâ uygulamasina katilan ogretmenlerin ve ogrencilerin uygulama hakkindaki gorusleri uzerine nitel bir arastirma. *Abant Izzet Baysal Universitesi Egitim Fakultesi Dergisi*, 5(2): 189-206.

Baydur H 2012. Onemlilik testleri. From <http://www.hakanbaydur.net/wp-content/uploads/2012/11/biyoistatistik_ders6_onemlilik_testleri_1slayt.pdf> (Retrieved on 13 January 2014).

Cetin O, Sengezer B 2013. Ortaokul ogrencilerinin proje calismalarina iliskin gorusleri. *Ege Egitim Dergisi*, 14(1): 24–49.

Dag F, Durdu L 2011, Eylul. Ogretmen adaylarinin proje tabanli ogrenme surecine yonelik gorusleri. In: Z. Genc (Chair), 5th International Computer & Instructional Technologies Symposium, Symposium conducted at the meeting of University of Firat, Elazig.

Demirel O, Tuncel I, Demirhan C, Demir K 2008. Coklu Zekâ Kurami ile Disiplinlerarasi Yaklasimi Temel Alan Uygulamalara Iliskin Ogretmen-Ogrenci Gorusleri. *Egitim ve Bilim*, 33(147): 14-25.

Denis Celiker H 2012. Fen ve Teknoloji Dersi "Gunes Sistemi ve Otesi: Uzay Bilmecesi" Unitesinde Proje Tabanli Ogrenme Uygulamalarinin Ogrenci Basarilarina, Yaratici Dusunmelerine, Fen ve Teknolojiye Yonelik Tutumlarina Etkisi. Ph. D. Thesis, Unpublished. Izmir: University of Dokuz Eylul. From <http://tez2.yok.gov.tr/> (Retrieved on 11 October 2014).

Elmaci TM 2010. Coklu Zeka Kuramina Dayali Ogretimin Ortaogretim Dokuzuncu Sinif Biyoloji Dersi Canlilarin Temel Bilesenleri Konusunda Ogrencilerin Akademik Basarisina Etkisi. Master Thesis, Unpublished. Ankara: University of Gazi. From <http://tez2.yok.gov.tr/> (Retrieved on 14 October 2013).

Fakolade OA, Adeniyi SO 2010. Efficacy of Enrichment Triad and Self-Direct Models on Academic Achievement of Gifted Students in Selected Secondary Schools in Nigeria. International Journal of Special Education, 25(1): 10-16. From <http://www.ajol.info/index.php/ajcpsf/article/view/37627> (Retrieved on 19 November 2013).

Feldhussen J, Kolloff PB 1986. The purdue three-stage enrichment model for gifted education at the elementary level. In: JS Renzulli (Ed.): *System and Models for Developing Programs for the Gifted and Talented.* Mansfield Center, CT: Creative Learning Press, pp.126-152.

Garcia-Cepero MC 2008. The Enrichment Triad Model: Nurturing creative-productivity among college students. *Innovations in Education and Teaching International*, 45(3): 295-302.

Gorman JC 2011. *The Association Between Grades Pre K-12 Student Achievement and Differentiated Instructional Strategies in the Anytown Township School District Explored Through Units of Study.* Ph. D. Thesis, Unpublished. USA: University of Rowan.

Gozum AIC 2011. Coklu Zeka Kuramina Gore Islenen Enzimler Konusunun Fen Bilgisi Ogretmen Adaylari Uzerindeki Basarisinin Incelenmesi. Master Thesis, Unpublished. Kars: University of Kafkas. From <http://tez2.yok.gov.tr/ > (Retrieved on 14 October 2014).

Gurbuz R 2011. Positive and negative reflections of maths teaching carried out in learning environment designed based on multiple intelligence theory. *International Online Journal of Educational Sciences*, 3(3): 1195-1223.

Kadum-Bošnjak S, Buršiæ-Kri•anac B 2012. Impact of differentiated instruction on achievement in teaching mathematics to lower-stage grades. *Metodièki obzori*, 7(15):15-29. doi: 373.1:51]:373.32

Kalayci S 2009. *SPSS Uygulamali Cok Degiskenli Istatistik Teknikleri.* Ankara:Asil.

Karacalli S 2011. Ilkogretim 4. Sinif Fen ve Teknoloji Dersinde Proje Tabanli Ogrenme Yonteminin Akademik Basariya, Tutuma ve Kaliciliga Etkisi. Master Thesis, Unpublished. Burdur: University of Mehmet Akif Ersoy. From <http://tez2.yok.gov.tr/> (Retrieved on 21 March 2013).

Karatas Ozturk S 2007. *Yaratici Dusunmeye Dayali Ogrenme Yaklasiminin Ogrencilerin Yaratici Dusunme ve Problem Cozme Becerilerine Etkisi.* Master Thesis, Unpublished. Eskisehir: University of Osmangazi.

Karatas S, Ozcan S 2010. Yaratici dusunme etkinliklerinin ogrencilerin yaratici dusunmelerine ve proje gelistirmelerine etkisi. *Ahi Evran Universitesi Egitim Fakultesi Dergisi*, 11(1): 225-243.

Karp A 2011. Gifted education in russia and the United States. In: B Sriraman, KH Lee (Eds.): *The Elements of Creativity and Giftedness in Mathematics*. Rotterdam, Netherlands: Sense Publishers, pp. 131-143.

Kasarci I 2013. Proje Tabanli Ogrenme Yaklasiminin Ogrencilerin Akademik Basari ve Tutumlarina Etkisi: Bir Meta-Analiz Calismasi. Master Thesis, Unpublished. Eskisehir:University of Osmangazi. From <http://tez2.yok.gov.tr/> (Retrieved on 12 May 2014).

Kayiran T 2009. *Coklu Zekâ Kurami Destekli Proje Tabanli Ogrenme Yonteminin Sosyal Bilgiler Dersinde Akademik Basari, Tutum ve Kaliciliga Etkisi.* Master Thesis, Unpublished. Adana: University of Cukurova.

Krajcik JS, Czerniak CM 2014. *Teaching Science in Elementary and Middle School: A Project-Based Approach.* Newyork, NY: Routledge.

Kok B 2012. Ustun Zekali ve Yetenekli Ogrencilerde Farklilastirilmis Geometri Ogretiminin Yaraticiliga, Uzamsal Yetenege ve Basariya Etkisi. Ph. D. Thesis, Unpublished. Istanbul:University of Istanbul. From <http://tez2.yok.gov.tr/> (Retrieved on 20 March 2013).

Kurak D 2009. Ilkogretim Dorduncu ve Besinci Sinif Ogrencilerinin Yaptigi Proje Calismalarinin Ogretmen ve Ogrenci Goruslerine Gore Degerlendirilmesi. Master Thesis, Unpublished. Adana:University of Cukurova. From <http://tez2.yok.gov.tr/> (Retrieved on 18 July 2013).

Kurtulus N 2012. Yaratici Dusunmeye Dayali Ogretim Uygulamalarinin Bilimsel Yaraticilik, Bilimsel Surec Becerileri ve Akademik Basariya Etkisi. Master Thesis, Unpublished. Trabzon:University of Karadeniz Technical. From <http://tez2.yok.gov.tr/> (Retrieved on 12 August 2013).

Luehmann AL 2009. Students' Perspectives of a Science Enrichment Programme: Out of School Inquiry as Access. International Journal of Science Education, 31(13):1831-1855. From <http://www. tandf online.com/doi/abs/10.1080/09500690 802354 195#.U1jq1fl_uuI > (Retrieved on 10 July 2013).

MEGEP (Mesleki Egitim ve Ogretim Sisteminin Guclendirilmesi Projesi) 2007. Cocuk gelisimi ve egitimi ustun zeka ve ozel yetenekli cocuklar. Mili Egitim Bakanligi. Ankara. From <http://cygm.meb.gov.tr/modulerprogramlar/kursprogramlari/cocukgelisim/moduller/ustunzekaveoze lyetenekliler.pdf> (Retrieved on 25 May 2013).

Memisoglu H 2011. The Effect of Project Based Learning Approach in Social Sciences Class on the Student Success and Memorability. International Journal of Humanities and Social Science, 1(21): 295-307. From <http://ijhssnet.com/journals/Vol_1_No_21_Special_Issue_December_2011/33.pdf > (Retrieved on 13 February 2013).

Memmert D 2006. Developing creative thinking in a gifted sport enrichment program and the crucial role of attention processes. *High Ability Studies*, 17(1): 101–115.

Nogueira SM 2006. MORCEGOS: A Portuguese enrichment program of creativity pilot study with gifted students and students with learning difficulties. *Creativity Research Journal*, 18(1): 45–54.

Ozcan S 2009. Yaratici Dusunme Etkinliklerinin Ogrencilerin Yaratici Dusunmelerine ve Proje Gelistirmelerine Etkisi. Master Thesis, Unpublished. Ankara: University of Gazi. From <http://tez2.yok. gov.tr/ > (Retrieved on 25 March 2014).

Ozerbas MA 2011. Yaratici dusunme ogrenme ortaminin akademik basari ve bilgilerin kaliciliga etkisi. *Gazi Egitim Fakultesi Dergisi*, 31(3): 675-705.

Papastergiou M 2005. Learning to Design and Implement Educational Web Sites within Pre-Service Training: A Project-Based Learning Environment and its Impact on Student Teachers. Learning, Media and Technology, 30(3): 263–279. From <http://eric.ed.gov/?id=EJ724733 > (Retrieved on 13 January 2014).

Poonpon K 2011. Enhancing English skills through project based learning. *The English Teacher*, XL: 1-10.

Renzulli JS, Reis SM 2008a. Challenging all students with a continuum of enrichment services. In: AP Sharp, D Chao, L, Larson, J Gwin (Eds.): *Enriching Curriculum for All Students*. Thousand Oaks, California: Corwin Press, pp. 35-53.

Renzulli JS, Reis SM 2008b. Enrichment learning and teaching. In: AP Sharp, D Chao, L, Larson, J Gwin (Eds.): *Enriching Curriculum for All Students*. Thousand Oaks, California: Corwin Press, pp. 103-130.

Reis SM, McCoach DB, Little CA, Muller LM, Kaniskan RB 2011. The Effects of Differentiated In-

struction and Enrichment Pedagogy on Reading Achievement in Five Elementary Schools. American Educational Research Journal, 48(2): 462–501. From <http://aer.sagepub.com/content/48/2/462.short> (Retrieved on 10 November 2013).

Saban A 2005. *Coklu Zeka Teorisi ve Egitim.* Ankara: Nobel Yayinlari.

Sadioglu O, Onur Sezer G, Caglar Ozteke H, Ilhan Tuncer B 2012. Universite-okul isbirligi ile gerceklestirilen proje odevi calismalarina yonelik ogrenci gorusleri. *The Journal of Academic Social Science Studies,* 5(8): 989-996.

Sert Y 2008. "Elemanter Sayi Kurami" Dersinde Proje Destekli Ogretimin Ogrenci Basarisina Etkisi. Master Thesis, Unpublished. Istanbul: University of Marmara. From <http://tez2.yok.gov.tr/> (Retrieved 15 on October 2013).

Singh P 2013. Accounting Enrichment Program for Gifted High School Pupils: Self-Regulated Learning Strategies to Develop Our Future Business Leaders. International Business & Economics Research Journal (IBER), 12(1):103-112. From <file:///C:/Users/Esra/Downloads/7515-29988-1-PB%20(1).pdf> (Retrieved on 20 April 2014).

Sahin S 2007. Proje temelli ogrenme ortaminda derslerarasi isbirligi ile ilgili ogrenci goruslerinin incelenmesi. *Turkiye Sosyal Arastirmalar Dergisi,* 11(3): 65-76.

Sengul S, Oz C 2008. Ilkogretim 6. sinif kesirler unitesinde coklu zekâ kuramina uygun ogretimin ogrenci tutumuna etkisi. *Ilkogretim Online,* 7(3): 800-813.

Sirin O 2010. Coklu Zeka Uygulamalarinin Sosyal Bilgiler Dersinde Ogrencilerin Akademik Basarilarina Etkisi. Master Thesis, Unpublished. Elazig: University of Firat. From <http://tez2.yok.gov.tr/ > (Retrieved on 21 April 2013).

Tabuk M 2009. *Proje Tabanli Ogrenmede Coklu Zekâ Yaklasiminin Matematik Ogrenme Basarisina Etkisi.* Ph. D. Thesis, Unpublished. Istanbul: University of Marmara.

Tertemiz N, Sahinkaya N 2010. Proje ve etkinlik destekli ogretimin sinif ogretmeni adaylarinin matematik ogretimine yonelik yeterlik inanclarina etkisi. *Abant Izzet Baysal Universitesi Dergisi,* 10(1): 87-98.

Tomlinson CA 2000. What is Differentiated Instruction? From <http://www.roe11.k12.il.us/GES%20Stuff/Day%204 Content/Differentiation%20Packet-Combined.pdf> (Retrieved on 20 March 2013).

Tusside (Tubitak Turkiye Sanayi Sevk ve Idare Enstitusu) 2009. Ustun Zekalilar Calistayi (BILSEM MODELI) Raporu. Gebze-Kocaeli. From <http://www. sinopbilimsanat.gov.tr/arkaplan/BILSEM_Modeli_Raporu.pdf> (Retrieved on 21 June 2011).

Tuzunak S 2002. Kim Ustun zekali. From <www.kirikkalebilsem.com/dokumanlar/ustun.pdf> (Retrieved on 20 May 2011).

Uzunoz A, Akbas Y 2011. Cografya dersinde coklu zekâ destekli ogretimin ogrenci basarisi ve kaliciliga etkisi. *Turk Egitim Bilimleri Dergisi,* 9(3): 467-496.

Unlu P 2008. An Application of the Three Stage Purdue Model in Physics Education in Turkey. Journal of Applied Sciences, 8(22):4137-4144. From <http://www.docsdrive.com/pdfs/ansinet/jas/2008/4137-4144.pdf > (Retrieved on 10 September 2013).

Varisoglu B, Sevim O 2014. The effect of project based cooperative learning method on the success of student's affixes subject learning in Turkish course. *Journal of International Social Research,* 7(32): 540-550.

VanTassel-Baska J, Brown E 2009. An analysis of gifted education curriculum models. In: FA Karnes, SM Bean (Eds.): *Methods and Materials for Teaching the Gifted*. Waco, TX: Prufrock Press Inc, pp.75-106.

Yalmanci SG, Gozum AIC 2013. The Effects of Multiple Intelligence Theory Based Teaching on Students' Achievement and Retention of Knowledge (Example of the Enzymes Subject). International Journal on New Trends in Education and Their Implications, 4(3): 27-36. From <http://www. ijonte.org/FileUpload/ks63207/File/04.yalmanci.pdf> (Retrieved on 25 March 2014).

Yildiz Z 2012. Proje Tabanli Ogrenme Yonteminin Orta Ogretim Ogrencilerinin Yaratici Dusunme Problem Cozme ve Akademik Risk Alma Duzeylerine Etkisi. Master Thesis, Unpublished. Ankara: University of Gazi. URL-1, From <http://www.vanbilsem.gov.tr/vanbilsemm. swf> (Retrieved on 18 September 2013).