International Electronic Journal of Elementary Education
Vol. 2, Issue 3, July, 2010.

Effects of multiple intelligences supported project-based learning on students' achievement levels and attitudes towards English lesson

Gökhan BAŞ[1]
Selcuk University, Turkey

Ömer BEYHAN
Selcuk University, Turkey

Abstract

The aim of the research was to investigate the effects of multiple intelligences supported project-based learning and traditional foreign language-teaching environment on students' achievement and their attitude towards English lesson. The research was carried out in 2009 – 2010 education-instruction year in Karatli Sehit Sahin Yilmaz Elementary School, Nigde, Turkey. Totally 50 students in two different classes in the 5th grade of this school participated in the study. The results of the research showed a significant difference between the attitude scores of the experiment group and the control group. It was also found out that the multiple intelligences approach activities were more effective in the positive development of the students' attitudes. At the end of the research, it is revealed that the students who are educated by multiple intelligences supported project-based learning method are more successful and have a higher motivation level than the students who are educated by the traditional instructional methods.

Keywords: English lesson, multiple intelligences supported project-based learning, attitude towards English lesson, students academic achievement

Introduction

Bruner (1983) investigated why children find school learning so difficult. He discovered that this was because children experienced it as very separate

[1] **Correspondence:** gokhan51bas@gmail.com, Selcuk University, Ahmet Kelesoglu Education Faculty, Meram, Konya Tel.: 00905056876677.

from their real lives. His theory of learning is essentially "constructivist", a model of learning in which the child is seen as an "active agent" in his or her own learning, retaining, selecting and transforming information to construct knowledge which is shaped by his or her unique way of seeing and interpreting the world (Bas, 2010a; Brooks & Brooks, 1999; Senturk & Bas, 2010; Yurdakul, 2004). Bruner (1983) also thought that the child's learning is a process, not merely a product, which can be accelerated or enhanced by social and group processes.

The work of Vygotsky (1978) is very important since he emphasised the role of "social atmosphere/interaction". He sees children as constructing their knowledge from the social interaction of their learning contexts with all its possibilities and limitations. In this regard, as Anning (1991) suggests that children are unique in what they bring to the learning experience but tend to draw on the same kinds of learning strategy. This means that we must think of learners as having individual differences so that teachers need to pay attention to the organisation of their classrooms. They must also consider their students' "learning styles" (Dunn, 2000) and different "intelligence profiles" (Gardner, 1993, 1999). As teachers must consider their students' *intelligence profiles and learning styles* and they must also consider them as having individuals, they must use the modern language learning methods and approaches in their classroom in order to create an atmosphere which pays attention to learners with different learning preferences (Bas, 2009b). In the learning environment, it is essential that the learning atmosphere must be "student-centred" so that students in this atmosphere must do the activities by themselves or in other words they must adopt the responsibility of their own learning (Abbott & Ryan, 1999; Bas, 2008, 2009a; Brooks & Brooks, 1999; Yurdakul, 2004).

Project Based Learning Method and Education

The benefits of learning by practice have long been touted; the roots of the idea go back to John Dewey (Blumenfeld, et al. 1991). For over 100 years, educators such as John Dewey have reported on the benefits of experiential, hands-on, student-directed learning. Most teachers, knowing the value of engaging, challenging projects for students, have planned field trips, laboratory investigations, and interdisciplinary activities that enrich and extend the curriculum. "Doing projects" is a long-standing tradition in education (Merkham, et al. 2003).

The basis of project-based approaches is hardly new. Early in the 1920s, William Heard Kilpatrick advocated project-based instruction (Sunbul, 2007). His notion was that such instruction should include four components: purposing, planning, executing, and judging (Foshay, 1999). It is basically an attempt to create new instructional practices that reflect the environment in which children live and learn (Ozdemir, 2006).

Project-based learning is an instructional method centred on the learner. Instead of using a rigid lesson plan that directs a learner down a

specific path of learning outcomes or objectives, project-based learning allows in-depth investigation of a topic worth learning more about (Erdem, 2002; Harris & Katz, 2001). Project-based learning is a comprehensive approach to classroom teaching and learning that is designed to engage students in investigation of complex, authentic problems and carefully designed products and tasks (Blumenfeld, et al. 1991; Demirhan, 2002).

Project-based learning is still in the developmental stage. There is not sufficient research or empirical data to be able to state with certainty that project-based learning is a proven alternative to other forms of learning. Based on evidence gathered over the past years, project-based learning appears to be effective model for producing gains in academic achievement (Meyer, 1997; Ozdemir, 2006) and attitudes (Korkmaz, 2002; Meyer, 1997) although results vary with the quality of the project and the level of student engagement (Thomas, Michaelson & Mergendoller, 2002 as cited in Ozdemir, 2006).

Multiple Intelligences Theory and Education

While everyone might possess eight intelligences, they are not equally developed in any one individual. Some teachers feel that they need to create activities that draw on all eight, not only to facilitate language acquisition amongst diverse students, but also to help them realise their full potential with all eight. One way of doing so is to think about the activities that are frequently used in the classroom and to categorise them according to intelligence type (Larsen-Freeman, 2000: 170).

If we accept that different intelligences predominate in different people, it suggests that the same learning task may not be appropriate for all our students. While people with a strong logical / mathematical intelligence might respond well to a complex grammar explanation, a different student might need to comfort of diagrams and physical demonstration because their strengths is in the visual / spatial area. Other students who have a strong interpersonal intelligence may require a more interactive climate if their learning is to be effective (Harmer, 2001: 47).

Intelligence has traditionally been defined in terms of intelligence quotient (IQ), which measures a narrow range of verbal/linguistic and logical/mathematical abilities (Christison, 1996). Gardner (1993) argues that humans possess a number of distinct intelligences that manifest themselves in different skills and abilities. All human beings apply these intelligences to solve problems, invent processes, and create things. Intelligence, according to multiple intelligences theory, is being able to apply one or more of the intelligences in ways that are valued by a community or culture.

The current Multiple Intelligences Theory outlines *eight intelligences*, although Gardner (1993, 1999) continues to explore additional possibilities:

1. *Verbal / Linguistic Intelligence:* The ability to use language effectively both orally and in writing.
2. *Logical/Mathematical Intelligence:* The ability to use numbers effectively and reason well.
3. *Visual/Spatial Intelligence:* The ability to recognise form, space, colour, line, and shape and to graphically represent visual and spatial ideas.
4. *Bodily/Kinaesthetic Intelligence:* The ability to use the body to express ideas and feelings and to solve problems.
5. *Musical Intelligence:* The ability to recognise rhythm, pitch, and melody.
6. *Interpersonal Intelligence:* The ability to understand another person's feelings, motivations, and intentions and to respond effectively.
7. *Intrapersonal Intelligence:* The ability to know about and understand oneself and recognise one's similarities to and differences from others.
8. *Naturalist Intelligence:* The ability to recognise and classify plants, minerals, and animals.

The theory of multiple intelligences offers eight ways of teaching and learning styles. In this regard, armed with the knowledge and application of the multiple intelligences, teachers can ensure they provide enough variety in the activities they use so that as much of their pupils' learning potential can be tapped as possible (Bas, 2008, 2010b; Berman, 1998).

The younger the learners the more physical activity they tend to need and the more they need to make use of all their senses (Brewster, Ellis & Girard, 2003). According to Berman (1998), if children can draw or visualise an image, hum it or move through it first, they may be able to more easily talk or write about it. On the basis of the theory of multiple intelligences in this regard, children can also draw a picture while listening to a description, act out a nursery rhyme, follow instructions or make a shape or simple model while they listen to a description of it. This draws on learning by the ear and eye and is good for those with bodily-kinaesthetic intelligence.

There are research studies that explain the advantages of using project-based learning in educational settings (Balki-Girgin, 2003; Basbay, 2006; Fried-Booth, 1997; Gultekin, 2005; Korkmaz, 2002; Korkmaz & Kaptan, 2000; Williams, 1998; Yurtluk, 2003). However, only a few of them have focused on project-based learning in English teaching (Cirak, 2006; Kemaloglu, 2006). As just stated, only a few of the studies have focused on project-based learning in English teaching (Cirak, 2006; Kemaloglu, 2006). Although there are some studies which deal with the integration of the theory of multiple intelligences in English teaching, there are few studies (Ozdener & Ozcoban, 2004) which integrate multiple intelligences with project-based learning method. But these studies are not on English teaching. So this study is believed to open a new path to the *integration of*

multiple intelligences with project-based learning method. So, the purpose of this study is to examine the effects of multiple intelligences supported project-based learning on students' academic achievement levels and their attitudes towards English lesson.

Method

Research Design

An education programme was prepared in order to make students develop their achievement and attitude levels towards English lesson. In this study, an experimental method with a control group has been used (Karasar, 2005) in order to find out the difference between the students who were taught by multiple intelligences supported project-based learning method in the experiment group and the students who were taught by traditional instructional methods in the control group. The pre/post-test group research model is one of the most widely used research models in educational sciences (Dugard & Toldman, 1995).

Both groups were employed a pre-test and pre-attitude test prior to the experimental process. The subjects were given an achievement and an attitude scale tests towards English as a pre-test. Meanwhile, both the achievement and attitude scale tests were employed to both groups after the experimental process as a post-test.

Pre-test/post-test experimental design with a control group was used in the study (Kerlinder, 1973; Karasar, 2005). A small number of homogenous subjects provided us with information over a period of four weeks. To begin with, the subjects described what they actually did in the process of multiple intelligences supported project-based learning method.

Subjects of the Study

Two classrooms of 5th graders from Karatli Sehit Sahin Yilmaz Elementary School, Nigde, Turkey formed the subjects of the study. This study was performed amongst 50 elementary school students. 25 students from the 5-C class formed the experiment group and the rest of the students (25 students) from the 5-A class formed the control group of the study. The main reason for choosing this level was that in the reaching sequence of English classess, topics related to the foreign nations and countries are first introduced to students at this level in elementary level of education. All of the students in the study were around 11 years old. There were 13 (52%) male, 12 (48%) female students in the experimental group and 14 (56%) male, 11 (44%) female students in the control group. The families of the students in both groups had similar socio-economic backgrounds. The groups can be seen in the experimental design in Table 1 below:

Table 1. Organisation of the Experiment and the Control Groups

Experimental Group	The group on which multiple intelligences supported project-based learning method was applied
Control Group	The group on which traditional instructional methods were

applied

In order to investigate students' academic achievement levels and their attitudes towards English lesson, a specific lesson plan was prepared for the students in the experimental group. The academic achievement and the attitude scale tests towards English lesson were administrated to both groups in a single session as a pre-test. In four weeks, the experiment group was given various strategies for multiple intelligences supported project-based learning in the teaching session, but not the control group. Four weeks later, each of the groups was administrated the academic achievement and the English lesson attitude scale tests given as a post-test. As Manson & Bramble (1997) pointed out that the longer the time spent, the greater the probability that something could influence the subjects' environment that in turn would affect the results. Duration of four weeks was deemed appropriate to see the effects of the experimental treatment.

Procedures of the Study

In the experiment group, the following procedures have been applied. In the control group, traditional instructional methods have been used in the process of the study. The design of the study can be described as in the Table 2 below:

Table 2. Experimental Design Used in the Study

Groups	Pre-test	Experimental Design	Post-test
Experiment	$T1_{12}$	Multiple Intelligences Supported Project Based Learning Method	$T2_{12}$
Control	$T1_{12}$	Traditional Instructional Methods	$T2_{12}$

$T1_1$ ⟶ Academic Achievement Test
$T1_2$ ⟶ English lesson Attitude Scale Test

As can be seen in Table 2 above, one can see the scales applied on the subjects of the study. The academic achievement and the English lesson attitude scale tests were applied on the subjects of the study for two times before and after the experimental process.

This instructional treatment was conducted over four weeks in the 2009-2010 first term at Karatli Sehit Sahin Yilmaz Elementary School, Nigde, Turkey, 5th graders of two classes were enrolled in the study. The classes were selected randomly from the stated classes of the elementary school. Firstly, the academic achievement and the English lesson attittude tests were performed as a pre-test. In the next step, elementary school 5th grade courses were taught to the control group by using the traditional instruction methods and to the experiment group by using the multiple intelligences supported project based learning method.

After the topics in the lesson plan to be studied were selected, the researchers provided the necessary materials that reflect the principles of multiple intelligences theory and Project based learning method. Then, drawing on relevant research, all activities were developed by the researchers. Lesson plans for the procedure were based on Gardner's (1993, 1999) suggestions on teaching for a deep learning. In this study, experiment group studied the topics of the foreign nations and countries through multiple intelligences supported project based learning method related activities while the control group studied the same topics through more traditional activities.

In the control group, the teacher directed strategy represented that the traditional instructional methods were used in the course. The student was instructed only with traditionally designed learning material. Most of the time, the teacher presented the topics and the students listened to their teacher and answered the questions asked by their teacher. At the same time they carried out activities in their text-books. The instruction for the control group varied in the following ways. In terms of direct instruction, the practice best applicable to this method was drill and practice; students were taught the objectives through teacher-directed lectures, notes on the overhead, notes on the board, practice problems from the textbook, teacher developed worksheets, and the student workbook, which accompanied the text. However, in the experimental group, the activities were prepared in light of multiple intelligence supported project-based learning method. Different types of activities were taken for different types of intelligences of students by taking the lesson plan samples prepared for the multiple intelligence supported project-based learning method.

All courses attempted to model eight ways of multiple intelligences. The course structure incorporated two major conceptual frameworks for instruction. One was the multiple intelligences learning ways (Armstrong, 2000), and the other was the project-based learning method (Ciftci, 2006; Sunbul, 2007). In the beginning of the study, the students were appointed to eight multiple intelligences heterogeneous centres. These heterogeneous centres were created according to the principles of multiple intelligences theory. The students were given subjects dealing with some of the topics of the foreign nations and countries. The students worked in identical multiple intelligences centre so that the students were made to work on the given topics in the centres.

Firstly, students studied the environmental topics in working centres. For example, the procedure started with a reading session (verbal-linguistics intelligence) as a whole class-activity. The reading text was about the foreign nations and countries written by the researchers. It was hoped that this topic would be interesting for the students especially for the ones with highly developed verbal-linguistic intelligence. Before the text was given to students, some pictures of the foreign nations and countries were demonstrated to draw students' attention and provide a preparation for the

topic to be taught. The students were asked some questions about the text itself. Then, the participants listened to (musical intelligence) a selection of the national anthems and songs. As a second musical activity, they learnt a song adapted and changed from English into Turkish, "We are the World". The lyrics of this song were changed by the researchers in order to cover the basic vocabulary and insight of the foreign nations and countries. In the visual-spatial intelligence centre, students watched some documentary on the foreign nations and countries. Also, they were made to draw pictures on the foreign nations and countries and these pictures were demonstrated at school. In the naturalist intelligence centre, students were introduced to the geography and natural resources of the related countries. Also, in this intelligence centre, students were provided with a map of the world on which various countries were distributed. In the logical-mathematical intelligence centre, students investigated the demographic information related to the given countries via the Internet and other sources. In the intrapersonal intelligence centre, students were given pictures about some foreign nations and countries and they were asked to compare these nations and countries with each other in terms of geography, language, origin, etc. In the bodily-kinaesthetic intelligence centre, the students acted out a play which was developed by the researchers and then they acted out the play which reflected the cultural motives of those countries and nations at school. In the interpersonal intelligence centre, students organised a "world club" at school and then made short visits to the classrooms in their school and informed the students about some of the countries and nations in the world. They wanted to make the students be aware of the other nations in the world. They also published information cards about those foreign nations and countries and then they distributed them both to the students at school.

Secondly, the students created projects and activities according to the profile of their intelligence centre. When the students created their projects, they were reassigned to different groups in order to make them work in different multiple intelligences centres. The students studied on the foreign nations and countries by using different means of learning such as reference books, the internet, video conferencing, interviewing, etc. The students also learnt more from other resources including the teachers at school. In this process, the teachers helped the students for finding the materials and information, etc. for the creation of their projects. The students in these multiple intelligences centres studied in eight groups so that they studied to gain awareness towards the environment. The main aim in this education was to develop students' cultural awareness and knowledge levels of other nations and countries in the world. It was also aimed that the students feel themselves as a mutual citizen of the world.

Instruments

Academic Achievement Test: In order to collect the data related to academic achievement of the students, "*the academic achievement test*" developed by the researchers was conducted. A multiple-choice test including fifty items

(each item is 2 points; total score is 100) was developed and the reliability and validity of of the test were made. This test is used to measure the students' academic achievement in "*the foreign nations and countries*" unit. The test items which measure the objectives of academic achievement levels of the students in English lesson in the elementary school curriculum in Turkey.

The test was administrated on a total number of seventy-six students in an elementary school. In the first place, the item and test statistics of the achievement test were computed for reliability and validity. The reliability of the knowledge test was done by KR-20 reliability analysis method (Tekin, 1996; Yilmaz, 1998) so that the reliability value of the test was found as r = .88 and the test difficulty (P_j) was found as .59 and the test discrimination (rjx) was found as .48 so that it is revealed that the test is reliable and it was applied on the students both in the experiment and the control groups.

Table 3. Statistics for the Environmental Awareness Knowledge Test

Number of the Students	Number of the Questions	$\overline{X}$	Std. Dev.	KR–20	Average Test Difficulty	Average Discrimination of the Test
76	50	67.53	12.03	0.88	0.59	0.48

As seen in the table above, the environmental awareness knowledge test has a reliability of .88, an average level of test discrimination (.48) and an average level of test difficulty (.59). In the light of the data gathered for the academic achievement test, it can be said that the test has a high level of reliability, a medium level of difficulty and a high level of test discrimination.

English Lesson Attitude Scale Test: In this research, the "*English lesson attitude scale*" was used in order to measure students' attitudes towards English lesson. The scale was arranged by having done the reliability and validity studies and used to evaluate the attitutes of elementary school students towards English lesson by the researchers. The attitude scale test is a *five-point likert type scale* (which was used to differentiate orientations from 1 as *low* and 5 as *high*) reliability and validity of which have been made by *Cronbach Alpha* analysis, including 27 items that measure students' attitudes towards English lesson. The *Cronbach's Alpha* value of the attitude scale was found as α = .92. The Kaiser-Mayer-Olkin (KMO) sampling adequacy result was found as .884 and the Barlett test result was found as χ^2 = 10134.161 (p = .000). These results show that there is a strong correlation amongst the items. In light of the data, it can be said that the attitude scale test is both reliable and valid to be used in the current research.

Analysis of the Data

In this study, the statistical techniques such as *mean* ($\overline{X}$), *standard deviation* (Std. Dev.) and the *t-test* were used in the analysis of the data. The

p value was held as 0.05. Significance level was determined by taking *p* values into consideration so that $p > .05$ meant there was not a meaningful difference and $p < .05$ meant there was a meaningful difference. The statistical analyses have been done by means of *SPSS 15.0* statistical package programme for windows.

Limitations of the Study

Small sample size is one of the limitations of the study. The number of the participants in the study was limited to the number of 5th graders (totally 50 students) in *Karatli Sehit Sahin Yilmaz Elementary School*, Nigde, Turkey. Another limitation arises from the subject of English lesson since "*foreign nations and countries*" unit was used in the experiment and the control groups. In the experiment group, multiple intelligences supported project-based learning method was used. In the control group of the study, traditional instructional methods were used.

It was aimed to examine and observe how the multiple intelligences supported project-based learning method influence students' gaining of academic achievement and attitudes towards English lesson in this study. In this regard, the findings obtained from this study cannot be generalised to other settings.

Hypotheses

In order to identify the differences between the students of the experiment group and the students of the control group, following hypotheses were tried to be tested in the light of the acquired data in the study:

1. There is a significant difference between the achievement levels of the students in the experiment group and the students in the control group in terms of the usage of multiple intelligences supported project-based learning.
2. There is a significant difference between the attitude levels of the students in the experiment group and the students in the control group towards the lesson in terms of the usage of multiple intelligences supported project-based learning.

Results

The results given in tables were obtained from the students' answers to the achievement test and to the attitude scale test towards the English lesson. In this part of the study, the acquired data will be given with calculated analyses in tables below.

Analysis of the 1st Hypothesis

The first hypothesis of the study was "There is a significant difference between the achievement levels of the students in the experiment group and the students in the control group in terms of the usage of multiple intelligences supported project-based learning".

Table 4. Comparison of Pre-Test Achievement Scores of the Students in the Experiment and the Control Groups

Groups	N	$\overline{X}$	Std. Dev.	df	t	p
Experiment	25	33.6	13.9	48	0.342	.73*
Control	25	32.2	15.0			

*$p > .05$

In Table 4 above, the pre-test achievement scores of the students in the experiment group and the control group have been compared. The average score of the students in the experiment group has been found as $\overline{X}$= 33.6±13.9; and the average pre-test score of the students in the control group has been found as $\overline{X}$= 32.2±15.0. The difference between the students of these two groups has been analysed through independent samples t-test. The accounted t-value is $t_{(48)}$= 0.342. According to these results, there is no statistically significant difference between the pre-test scores of the students of these two groups in 0.05 level (p = .73, p > .05). Prior to the study's experimental process, it can be said that both groups' pre-learning levels in English course are equal to one another.

Table 5. Comparison of Post-Test Achievement Scores of the Students in the Experiment and the Control Groups

Groups	N	$\overline{X}$	Std. Dev.	df	t	p
Experiment	25	74.6	14.2	48	3.29	.0019*
Control	25	60.2	16.7			

*p<.05

The post-test achievement scores of the students in the experiment and the control groups have been compared in Table 5 above. The average post-test score of the students in the experiment group has been found as $\overline{X}$= 74.6±14.2; and the average post-test score of the students in the control group has been found as $\overline{X}$= 60.2±16.7. The difference between the two groups has been analysed through independent samples t-test. The accounted t-value is $t_{(48)}$= 3.29. The students in the experiment group ($\overline{X}$= 74.6) showed significant achievement compared to the students in the control group ($\overline{X}$= 60.2). So according to these results, it can possibly be said that there is a statistically significant difference between the post-test scores of the two groups in 0.05 level (p = .0019; p < .05).

Table 6. Comparison of Achievement Scores of the Students in the Experiment and the Control Groups

Groups	Pre Test			Post Test			Achievement			
	N	$\overline{X}$	Std.Dev.	N	$\overline{X}$	Std.Dev.	$\overline{X}$	Std.Dev.	t	p
Experiment	25	33.2	13.9	25	74.6	14.2	41.0	3.97	10.85	.000*
Control	25	32.2	15.0	25	60.2	16.7	28.0	4.48		

*p < .05

In Table 6 above, together with the results of the pre-test and the post-test, achievement scores and the t-values obtained from the achievement test scores could be seen. When one looks at the distribution of the post-test scores applied to both groups at the end of the research process, the average score of the experiment group has been found as $\overline{X}$= 74.6±14.2; and the average score of the control group has been found as $\overline{X}$= 60.2±16.7. The achievement scores have been accounted by using the difference between the pre-test and the post-test of the students in the experiment and the control groups. The average achievement of the students in the experiment group has been found as $\overline{X}$= 41.0±3.97; and the average achievement of the students in the control group has been found as $\overline{X}$= 28.0±4.48. The accounted t-value between the average achievement scores of the two groups is t = 10.85. This result shows that the average difference between the two groups is statistically different (p = .000, p < .05). When one looks at the average of the groups, it can be seen that the students in the experiment group have reached a higher achievement level compared to those in the control group. The experimental method, which is multiple intelligences supported project-based learning, applied has been more effective than the traditional language teaching methods in the control group. So the statistical analysis and findings of this study have justified the correctness of the first hypothesis.

Analysis of the 2nd Hypothesis

The second hypothesis of the study was "There is a significant difference between the attitude levels of the students in the experiment group and the students in the control group towards the lesson in terms of the usage of multiple intelligences supported project-based learning".

Table 7. Comparison of Pre-Test Attitude Scores of the Students in the Experiment and the Control Groups

Groups	N	$\overline{X}$	Std. Dev.	df	t	p
Experiment	25	1.72	0.678	48	0.207	.84*
Control	25	1.68	0.690			

*p > .05

In Table 7 given above, the pre-test attitude scores of the students in the experiment and the control groups could be seen. The average pre-test attitude score of the students in the experiment group has been found as $\overline{X}$= 1.72±0.678; and the average pre-test attitude score of the students in the control group has been found as $\overline{X}$= 1.68±0.690. The accounted t-value between the average scores of the two groups is $t_{(48)}$= 0.207. The data obtained are not statistically significant in 0.05 level since the pre-test attitude scores of the students of these two groups are similar.

Table 8. Comparison of Post-Test Attitude Scores of the Students in the Experiment and the Control Groups

Groups	N	$\overline{X}$	Std. Dev.	df	t	p
Experiment	25	2.56	0.507	48	3.55	.0009*
Control	25	1.96	0.976			

*$p < .05$

The post-test attitude scores of the students in the experiment group and the control group can bee seen in Table 8 above. The average post-test attitude score of the students in the experiment group has been found as $\overline{X} = 2.56 \pm 0.507$; and the average attitude post-test score of the students in the control group has been found as $\overline{X} = 1.96 \pm 0.976$. The t-test value obtained from the average scores of the two groups is $t_{(48)} = 3.55$ which shows a statistically significant difference ($p = .0009$, $p < .05$). In light of these data acquired in the research, it can be said that the students in the experiment group have reached higher attitude scores compared to those in the control group. The experiment method (multiple intelligences supported project-based learning) applied has enabled the students to develop positive attitudes towards English lesson. So the statistical analysis and findings of this study have justified the correctness of the second hypothesis of the study.

Conclusion and Discussion

Based on the findings obtained in the study, it can be said that there is a significant difference between the achievement levels of the students who have been educated by multiple intelligences supported project-based learning method and the students who have been educated by the traditional language teaching methods. The students who have been educated by multiple intelligences supported project-based learning method have become more successful than the students who have been educated by the traditional language teaching methods. Gultekin (2005) aimed to investigate the effects of project-based learning on fifth grade students' learning outcomes. In addition to academic success of the students, he found that project-based learning made students happy during the learning process by providing them with rich learning experiences. Similarly, Toci (as cited in Ozdemir, 2006) aimed to determine effects of project-based learning on intrinsic motivational orientation. It was reported that when the learning environment had an appropriate design, students' attitudes, and motivation increased. Meyer (1997) studied fourteen fifth and sixth grade students' challenge seeking during project-based mathematics instruction in one classroom. They drew on five areas of research: academic risk taking, achievement goals, self-efficacy, volition, and effect. They reported on the effects of fifth and sixth grade students' motivation and that although the surveys were useful in characterizing general patterns of challenge seeking, more individual and contextualized information was necessary for understanding how to support students engaged in challenging academic

work, such as project-based learning. According to the results, project-based learning increased the students' achievement level.

In studies made by Ciftci (2006), Cirak (2006), Chen (2006), Sylvester (2007), Bagci, et al. (2005), Gultekin (2005), Ozdemir (2006) and Kemaloglu (2006), it was found out there was a significant difference in the achievements of knowledge level between the groups, which multiple intelligences supported project-based learning method (experimental group) and the other group for which the traditional language teaching methods (control group) were used. The students in the experimental group which multiple intelligences supported project-based learning method was used had a more achievement level. These results resemble to the result of the present study. It can be said based on the findings; multiple intelligences supported project-based learning method was more effective on the development of students' academic achievement levels than the traditional language teaching methods. Demirel, et al. (2000) and Yurtluk (2003) studied the effect of the project-based learning approaches on students' achievement levels. In these researches, no change was observed in the achievement levels of the students both in the experimental and the control groups.

In terms of attitude towards English lesson, there is significant difference between the experiment group and the control group. The students who have been educated by multiple intelligences supported project-based learning method have been found out to have more positive attitude levels to English lesson than those who have been educated by the traditional language teaching methods. Ciftci (2006), Gultekin (2005), Erdem & Akkoyunlu (2002) and Ozdemir (2006) carried out studies by using Project-based learning method in learning atmospheres. They explored students' attitudes towards lessons by project-based learning method. In their studies, they found that there was a significant difference in the attitude levels towards the lesson between the groups, which project-based learning method (experimental group) and the other group for which the traditional language teaching methods (control group) were used. The students who were educated by project-based learning method developed more positive attitudes towards the lesson than the students who were educated by the traditional language teaching methods. These results resemble to the result of this study. It can be said based on the findings; project-based learning method was more effective on the development of students' attitudes towards lesson than the traditional language teaching methods. Demirel, et al. (2000) and Yurtluk (2003) investigated the effects of project-based learning approach on learning process and learners' attitudes. In their researches, it was found that there was no significant difference between pre- and post-test results of attitude scale in control and experimental groups. Ozdener & Ozcaban (2004) used project-based learning method by integrating multiple intelligences with it in computer courses. They found that the students who were educated by multiple

intelligences supported project-based learning method were more successful than the students who were educated by the traditional language teaching methods. In other words, there was a significant difference in the achievements of knowledge level between the groups, which multiple intelligences supported project-based learning method (experimental group) and the other group for which the traditional language teaching methods (control group) were used. The students in the experimental group which multiple intelligences supported project-based learning method was used had a more achievement level. This result also resembles to the result of the current study.

Korkmaz (2002) and Ciftci (2006) found out in their studies that students who were educated by project-based learning method were more successful in problem solving skills, academic risk taking and creative thinking skills. On the results of these studies, it can be said that project-based learning method not only has more positive effects on students' academic achievement levels and attitudes towards the lesson, it has also more positive effects on students' academic risk taking, problem solving and creative thinking skills. According to Blank (1997), Cinar, et al. (2005) and Ciftci & Sunbul (2006), students in the project-based learning atmosphere are exposed to a wide range of skills and competencies such as collaboration, project planning, decision making, critical thinking and time management. Collaborative learning allows students to bounce ideas off each other, voice their own opinions, and negotiate solutions - all skills that will be necessary in the workplace. As Ozdemir (2006) states, a project-based learning lesson provides students with the opportunity to learn in an authentic, challenging, multidisciplinary environment, to learn how to design, carry out, and evaluate a project that requires sustained effort over a significant period of time, to learn to work with minimal external guidance, both individually and in groups, to gain in self-reliance and personal accountability. Both teacher and peers can provide support, encouragement, and models. Where expectations for children's learning are high it is important that the social interaction itself be designed to facilitate learning.

The researcher in this study saw that the analysis of the experimental study has indicated that the experimental group students' achievement level was significantly higher than those taught using traditional language teaching methods. The most important thing in research was the experimental group students had more fun when they were learning and they did, touched, saw, and spoke about the things they learnt and they also had the change of socialisation and cooperation which are more important for them in these ages. The researcher also sees that these project-based learning helps the learners to develop many skills like, physical, intellectual, social, emotional and moral skills which are the skills the young learners have to develop. In project-based learning method, students used different types of intelligences. Students created projects integrating eight types of intelligences of multiple intelligences theory. By this way,

students not only had high achievement levels in English lesson, but also they had a chance to practise their different skills such as drawing, writing, thinking, etc. as well as using their different intelligence types like spatial, musical, verbal, social intelligences, etc.

Suggestions

As a result of this study, in which the effects of multiple intelligences supported project-based learning method on achievement and attitude levels of students in English lesson have been examined, the following suggestions can be given depending on the findings obtained:

1. In light of the gathered data in the study, multiple intelligences supported project-based learning method has been found to be more effective on students' achievement levels and attitudes towards the lesson than the traditional language teaching methods. So, it is recommended the teachers should use this method in their lessons. Because, after the experimental process of this method, students have risen their achievement levels and attitudes towards the lesson in a greater extent.
2. Seminars and courses should be organised as to train teachers to use this method effectively in their classrooms so that they can create a more positive classroom atmosphere.
3. Teachers should direct the process of the method effectively because if they cannot direct the method effectively, students can be frustrated and demoralised, they can be bored with the lesson and the method can be unsuccessful from the beginning of the process.
4. By this method, the learning environment is organised in a "student-centred" way. Students do not only memorise the concepts and other things, they do study the learning material deeply. In other words, they have a chance to practise their understanding on the learning material with project-based method. So the learning environment should be organised so that students interact face to face with each other and share the responsibility of the learning process.
5. Teachers should give projects to students so that students have a chance to select from a number of subjects. In addition, teachers should pay attention to the students so that the students organise their projects with the principles of multiple intelligences theory. For example, if students want to create a project on "foreign nations and countries", they can create their projects in *eight ways* of the theory of multiple intelligences.

• • •

Gökhan Baş, MS, is an English Language Teacher in the Ministry of National Education. His research interests include educational administration and supervision, curriculum and instruction, educational psychology, multiple intelligences, and educational measurement and evaluation.

Ömer Beyhan, PhD, is an assistant professor at Selcuk University Ahmet Kelesoglu Education Faculty, Curriculum and Supervision Department. His research interests include curriculum and instruction, educational measurement and evaluation, teaching-learning process.

References

Abbott, J. and Ryan, T. (1999). Constructing knowledge, reconstructing schooling. *Educational Leadership*, *57*(3), 66-69.

Anning, A. (1991). *The first year at school*. Ballmoor: Open University Press.

Armstrong, T. (2000). *Multiple intelligences in the classroom*. (Second ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Bagci, U., Ilik, A., Sunbul, A. M., Yagiz, D. & Afyon, A. (2005). Ilkogretim fen bilgisi ogretiminde uygulanan proje tabanli ogrenme yonteminin ogrencilerin basari duzeylerine etkisinin arastirilmasi 18 November. *I. Ulusal Fen ve Teknoloji Egitiminde Cagdas Yaklasimlar Sempozyumu*. Vakifbank Genel Mudurlugu, Ankara.

Balki-Girgin, A. (2003). *Proje temelli ogrenme yonteminin ozel Konya Esentepe ilkogretim okulu uygulanmasına yonelik bir degerlendirme*. Unpublished Master's Thesis. Selcuk Universitesi Sosyal Bilimler Enstitusu, Konya.

Bas, G. (2010a). Beyin temelli ogrenme yonteminin Ingilizce dersinde ogrencilerin erisilerine ve derse yonelik tutumlarina etkisi. *Elementary Education-Online*, *9*(2), 488-507.

Bas, G. (2010b). Ingilizce dersinde coklu zeka kuraminin ogrencilerin akademik basarilarina ve derse karsi tutumlarina katkilari. *e-Journal of New World Sciences Academy*. *5*(2), 411-430.

Bas, G. (2009a). Ingilizce dersinde isbirlikli ogrenme yaklasiminin ogrencilerin erisilerine, derse karsi tutumlarina ve ogrenilenlerin kaliciligina etkisi. *Milli Egitim Dergisi*, *38*(184), 240-256.

Bas, G. (2009b). Sinif yonetiminde coklu zeka. *Egitisim Dergisi*, Sayi: *23*.

Bas, G. (2009c). Teaching of weather forecasts and seasons by multiple intelligences in EFL/ESL classrooms. *Humanising Language Teaching*, *11*(6), December.

Bas, G. (2008). Integrating multiple intelligences in ESL/EFL classrooms. *The Internet TESL Journal, 14*(5), May.

Basbay, A. (2006). *Basamakli ogretim programiyla desteklenmis proje tabanli ogrenmenin surece, ogrenen ve ogretmen goruslerine etkisi*. Unpublished PhD Dissertation. Hacettepe Universitesi Sosyal Bilimler Enstitusu, Ankara.

Blank, W. (1997). Authentic instruction. Blank, W. E. & Harwell, S. (Eds.). *Promising practices for connecting high school to the real world*. Tampa, FL: University of South Florida. (ERIC Document Reproduction Service No. ED407586).

Berman, M. (1998). *A multiple intelligences road to an ELT classroom*. Bencyfelin: Crown House.

Blumenfeld, P., Soloway, E., Marx, R., Krajcik, J., Guzdial, M., & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist*, *26*(3-4), 369-398.

Brewster, J., Ellis, G. & Girard, D. (2003). *The primary English teacher's guide*. (New Ed.). London: Penguin Books.

Brooks, J. G. & Brooks, M. G. (1999). *In search of understanding: The case for constructivist classrooms*. (Revised Ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Bruner, J. (1983). *Child's talk: Learning to use language*. Oxford: Oxford University Press.

Chen, H-L. (2006). *Projects to think with and projects to talk with: How adult learners experience project-based learning in an online course*. Unpublished PhD Dissertation. Kansas State University College of Education, Manhattan, Kansas.

Christison, M. A. (1996). Teaching and learning language through multiple intelligences. *TESOL Journal*, 10-14.

Ciftci, S. (2006). *Sosyal bilgiler ogretiminde proje tabanli ogrenmenin ogrencilerin akademik risk alma duzeylerine, problem cozme becerilerine, erisilerine, kaliciliga ve tutumlarına etkisi*. Unpublished PhD Dissertation. Selcuk Universitesi Sosyal Bilimler Enstitusu, Konya.

Ciftci, S. & Sunbul, A. M. (2006). Sosyal bilgiler ogretiminde proje tabanli ogrenmeyi kullanmanin ogrencilere etkisinin cesitli degiskenler acisindan incelenmesi. *Selcuk Universitesi Egitim Fakultesi Dergisi*, 21-22, 309-326.

Cinar, D., Celebi, K., Afyon, A. Sunbul, A. M., & Yagiz, D. (2005). Fen ve teknoloji egitiminde proje tabanli ogrenme ve elestirel dusunme. 18 November. *I. Ulusal Fen ve Teknoloji Egitiminde Cagdas Yaklasimlar Sempozyumu*. Vakifbank Genel Mudurlugu, Ankara.

Cirak, D. (2006). *The use of project based learning in teaching English to young learners*. Unpublished Master's Thesis. Selcuk Universitesi Sosyal Bilimler Enstitusu, Konya.

Demirel, Ö., Başbay, A., Uyangör, N. & Biyikli, C. (2000). Proje tabanli ogrenme modelinin ogrenme surecine ve ogrenci tutumlarına etkisi. *IX. Egitim Bilimleri Kongresi Bildirileri*. Abant Izzet Baysal Universitesi Egitim Fakultesi, Bolu.

Demirhan, C. (2002). *Program gelistirmede proje tabanli ogrenme yaklasimi*. Unpublished Master's Thesis. Hacettepe Universitesi Sosyal Bilimler Enstitusu, Ankara.

Dugard, P. & Toldman, J. (1995). Analysis of pre-test – post-test control group designs in educational research. *Educational Psychology*, *15*(2), 181-198.

Dunn, R. (2000). Learning styles: Theory, research, and practice. *National Forum of Applied Educational Research Journa*l, *13*(1), 3-22.

Erdem, M. (2002). Proje tabanli ogrenme. *Hacettepe Universitesi Egitim Fakultesi Dergisi*, *22*, 172-179.

Erdem, M. & Akkoyunlu, B. (2002). Ilkogretim sosyal bilgiler dersi kapsaminda besinci sinif ogrencileriyle yurutulen ekiple proje tabanli ogrenme uzerine bir calisma. *Elementary Education-Online*, *1*(1), 2-11.

Fried-Booth, D. L. (1997). *Project work*. (8th Ed.) Oxford: Oxford University Press.

Foshay, J. D. (1999). *Project-based multimedia instruction*. Bloomington, IN: Phi Delta Kappa International.

Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences*. (Second Ed.). London: Fontana Press.

Gardner, H. (1999). Are there additional intelligences? The case for naturalist, spiritual, and existential intelligences. Kane, J. (Ed.). *Education, information and transformation*. Englewood Cliffs, NJ: Prentice Hall.

Gultekin, M. (2005). The effects of project-based learning on learning outcomes in the 5th grade social studies course in primary education. *Educational Sciences: Theory and Practice, 5*(2), 548–556.

Harmer, J. (2001). *The practice of English language teaching*. (Third Ed.). Harlow: Longman.

Harris, J. H. & Katz, L. G. (2001). *Young investigators: The project approach in the early years*. New York.

Karasar, N. (2005). *Bilimsel arastirma yontemi*. (15th Ed.). Ankara: Nobel Yayin Dagitim.

Kemaloglu, E. (2006). *Project work: how well does it work? Assessment of students and teachers about main course project work at Yildiz Technical university school of foreign language basic English department*. Unpublished Master's Thesis. Bilkent University Institute of Educational Sciences, Ankara.

Kerlinger, F. N. (1973). *Foundations of behavioral research*. New York: Holt, Rinehart & Winston.

Korkmaz, H. & Kaptan, F. (2000). Fen ogretiminde proje tabanli ogrenme yaklasimi. *Hacettepe Universitesi Egitim Fakultesi Dergisi*, *20*, 193–200.

Korkmaz, H. (2002). *Fen egitiminde proje tabanli ogrenmenin yaratici dusunme, problem cozme ve akademik risk alma duzeylerine etkisi*. Unpublished PhD Dissertation. Hacettepe Universitesi Sosyal Bilimler Enstitusu, Ankara.

Larsen-Freeman, D. (2000). *Techniques and principles of language teaching*. (Second Ed.). Oxford: Oxford University Press.

Manson, E. J. & Bramble, W. J. (1997). *Research in education and the behavioral sciences: Concepts and methods*. Los Angeles: A Time Mirror Company.

Markham, T., Mergendooler, J., Learmer, J. & Ravitz, J. (2003). *Project based learning handbook*. Hong Kong: Quinn Essentials Books and Printing, Inc.

Meyer D. K. (1997). Challenge in a mathematics classroom: Students' motivation and strategies in project based learning. *The Elementary School Journal*, *97*(5), 501–521.

Ozdemir, E. (2006). *An investigation on the effects of project-based learning on students' achievement in and attitude towards geometry*. Unpublished Master's Thesis. Middle East Technical University Graduate School of Natural and Applied Sciences, Ankara.

Ozdener, N. & Ozcoban, T. (2004). A project based learning model's effectiveness on computer courses and multiple intelligence theory. *Education Sciences: Theory & Practice*, *4*, 147–170.

Saricoban, A. (2001). *The teaching of language skills*. Ankara: Hacettepe-Tas Publications.

Senturk, C. & Bas, G. (2010). Yapılandirmaci yaklasimda egitim ve sinif yönetimi. *Egitime Bakis*, *6*(16), 66-72.

Sunbul, A. M. (2007). *Ogretim ilke ve yontemleri*. Konya: Cizgi Kitabevi.

Sylvester, A. (2007). *An investigation of project-based learning and computer simulations to promote conceptual understanding in eighth grade mathematics*. Unpublished PhD Dissertation. Kansas State University College of Education, Manhattan, Kansas.

Tekin, H. (1996). *Egitimde olcme ve degerlendirme*. Ankara: Yargi Yayinlari.

Vygotsky, L. (1978). *Mind in society*. Cambridge, Mass.: Harvard University Press.

Williams, D. A. (1998). *Documenting children's learning: Assessment and evaluation in the project approach*. Unpublished Master's Thesis. Alberta University Graduate School of Education, Edmonton, Alberta.

Yilmaz, H. (1998). *Egitimde olcme ve degerlendirme*. (3. Ed.). Konya: Mikro Yayinlari.

Yurdakul, B. (2004). *Yapılandırmaci ogrenme yaklasiminin ogrenenlerin problem cozme becerilerine, bilisotesi farkindalik ve derse yonelik tutum duzeylerine etkisi ile ogrenme surecine katkilari*. Unpublished PhD Dissertation. Hacettepe Universitesi Sosyal Bilimler Enstitusu, Ankara.

Yurtluk, M, (2003). *Proje tabanli ogrenme yaklasiminin matematik dersi ogrenme sureci ve ogrenci tutumlarina etkisi.* Unpublished Master's Thesis. Hacettepe Universitesi Sosyal Bilimler Enstitusu, Ankara.

www.iejee.com

This page is blank