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The relationship between active learning models in music lessons in elementary schools and multiple intelligence areas

Sibel Coban[a]*, İlayda Dubaz[b]

a. Marmara University, Ataturk Education Faculty, Department of Fine Arts, Istanbul, Turkey
b. Marmara University, Institute of Educational Sciences Fine Arts Education Section, *Istanbul,*

Abstract

The objective of this study is to reveal the effect of the active learning model on the multiple intelligence areas of students when applied in elementary school music classes. The working group of the study consisted of 52 students, 52 students' parents and a music teacher. The study was conducted at an Istanbul elementary school during the first term of the 2010-2011 school year. The experimental group was taught using active learning education techniques. The pre test-post test was performed on students' parents and the music teacher of the school. The study used the Multiple Intelligence Development Assessment Scale, developed by Shearer (1994) and adapted to Turkish by Kaya (2004), with a Personal Information Form and Observation Form.
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1. Introduction

Today, rather than the concept of 'teaching', the concept of 'learning' has gained importance; in line with this consciousness, the available educational approaches have been reanalyzed by taking personal and social requirements into consideration and a new constructivism has emerged, with regard to providing individuals the required basic skills, such as access to knowledge, use and production of knowledge, and lifelong maintenance of these skills (MEB, 2006).

Learning is a dynamic process. A person learns things as long as she/he lives. A person who learns a subject becomes a different person. With each new learning experience, the capacity of the person is expanded and she/he becomes able to do additional things. In a broader sense, the person attributes a new meaning to the universe and she/he redetermines her/his position in the universe as a result of learning (Özden, 2005, p: 14).

"In active learning, students interact and share their problems and knowledge with one another, research, think and explore to perform learning" (Açıkgöz, 2003, p. 39). In active learning, the student not only learns the subject being taught so well that she/he can repeat it, but also plans where to use it and knows why she/he learns it. The student is supposed to be aware of her/his responsibilities and make her/his own decisions during the learning process.

According to the principle of active learning, the students are not passive; in other words, the information on a particular subject is not transferred, by others, to the minds of students sitting passively at their desks. The students

*Sibel Coban. Tel.:. +90 216 345 47 05.
E-mail address: cobansibel@gmail.com.

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actively participate in learning mentally, emotionally, socially and physically and make their own decisions on what the subject they learn means to them. Thus, whenever a student is required to memorize something and arrive at only one correct answer, then meaningful learning is not accomplished by that student (Saban, 2002, p: 246).

The theoretical principles of active learning are also based on constructivism. It has helped to explore the talents of students; instead of classifying them only according to their verbal and numerical abilities, to also include the sense of multiple intelligence in this process.

According to the basic philosophy included in the Curriculum of 2006 Primary Education Music Lesson (1-8th grades), the "Constructivist Approach" which includes a student-centered perception, and "Multiple Intelligence Theory" were used in applying these new approaches. As in every field, the process of making the student active and enabling her/him to explore and structure the information, was anticipated to benefit from some special methods of music teaching that are peculiar to the general and the field in the process of music education, as well (MEB, 2006).

In his work 'Frames of Mind', published in 1983, Gardner suggested that a person has a wide spectrum of abilities, consisting of the diversification of at least seven basic intelligence fields. However, as well as defining the seven different intelligence fields, Gardner also drew attention to the fact that this number is never enough to express the multitude of human abilities and that there would be more intelligence fields than ever (Saban, 2001, p.6). Introducing a new intelligence field in his work 'Intelligence Reframed', published in 1999, Gardner reformulated the multiple intelligence theory. The intelligence fields suggested by Gardner are as follows (Saban, 2001, p.6):

Verbal-Linguistic, Logical-Mathematical, Visual-Spatial, Musical-Rhythmic, Physical-Kinaesthetic, Interpersonal, Intrapersonal, Naturalist Intelligence.

Sustaining his studies on a ninth aspect of intelligence, Gardner referred to this as 'Existential Intelligence', which is the form of intelligence that sustains study (Demirel, Başbay, & Erdem, 2006, p. 15). To briefly summarize these intelligence types: Verbal/linguistic intelligence includes the skill of sensitivity to sounds, concepts, pronunciations, emphasis and meanings of words; grammatical structure and functions of the language; Logical/mathematical intelligence includes the skill of sensitivity to numbers and quantitative relations, judgment, logic, questioning and cause-effect relationships; Visual-spatial intelligence includes the skill of sensitivity to accurately perceiving the visual and spatial world and displaying the obtained impressions by means of different forms or drawings; Musical-rhythmic intelligence includes sensitivity to musical elements such as rhythm, note, melody and voice, distinguishing the sounds and works, finding and expressing the values; Physical-kinaesthetic intelligence includes the skill of expressing feelings and thoughts with the body; Interpersonal-social intelligence includes the skill of accurately comprehending, distinguishing and fulfilling the characters, feelings, interests, needs and motivations of people; Intrapersonal intelligence includes the skill of being aware of the interests, needs, ideals, weak and strong sides of the person and making correct decisions in life; Naturalist intelligence includes sensitivity to every incident regarding nature, distinguishing and classifying living and nonliving creatures.

From this point of view, activities that are performed using the active learning model and multiple intelligence theory are important in terms of exploring the musical talents of students, enabling their musical development and, additionally, contributing to multiple intelligence fields.

This study examined the theory that students would be enabled to learn more permanently and enjoyably and present their effects upon the multiple intelligence fields by applying the active learning model in primary education music lessons.

2. Objective of the Study

This study aims to reveal the effect of the active learning model on the multiple intelligence fields of students when applied in primary education music lessons. The following questions were examined within the framework of this general objective:

1. On which multiple intelligence fields of students were the music lessons performed with active learning model effective?

2. Is there a significant difference between the pre test-post test musical-rhythmic intelligence scores of the experimental and control group of the music teacher?

3. Is there a significant difference between the pre test- post test scores of the experimental and control groups of parents?

3. Method

This study was carried out with the experimental model with pre test – post test control group, which is one of the real experimental models. This study used the Multiple Intelligences Developmental Assessment Scale (MIDAS), Personal Information Form and Observation Form to obtain the required data. MIDAS (Multiple Intelligences Developmental Assessment Scale) is the Multiple Intelligences Developmental Assessment Scale, described by Gardner as the first evaluation means developed in accordance with standard psychometric criteria. MIDAS (ages 10-14) consists of two scales. The first scale, consisting of 93 questions, was performed on students; the second scale, consisting of 70 questions, was performed on teachers and parents. The MIDAS scale related to the 10-14 age group was developed in 1994, by the Developmental Psychologist Dr. Branton Shearer. It was adapted into Turkish by O.N. Kaya in 2004. In s study by Kaya (2008), the Cronbach alpha reliability coefficient of the MIDAS scale was 0.81.

The application lasted for eight weeks. The pre test-post test was performed on students, parents and the music teacher during the first and last weeks. During the other six weeks, the experimental group received active learning-based education, which was prepared according to the lower dimensions of multiple intelligence, whereas conventional education was performed in the control group. The subjects and songs to be taught in the experimental and control groups were determined in cooperation with the music teacher. The lesson plan to be applied was prepared according to the curriculum and attention was paid to common action. In the first phase of the study, the pre-test was performed on both groups. Analysis of the pre test results showed no significant differences between the experimental and control groups. In terms of the reliability of the study, it is important to ensure that both groups start the study from an equal position. The results of the pre test are included as tables in the Findings section.

In the last week of the study, the post test was performed on both groups. The pre test – post test was performed on the students' parents and the music teacher in the experimental and control groups at the same times. The results of the post test are included as tables in the Findings section.

3.1. Data Analysis

The Wilcoxon test is used for the pre test-post test comparison in non-parametric ($n<30$) groups, and the related group t-test is used in parametric ($n>30$) groups. In the present study, the Wilcoxon test was used in an attempt to determine whether the scores obtained from the lower dimensions of the Multiple Intelligence test by 26 students in the experimental group differed significantly.

The Mann-Whitney U test is used to test whether there is a difference between non-parametric ($n<30$) groups, while the non-related group t-test is used in parametric ($n>30$) groups. In the present study, the Mann-Whitney U test was used to determine whether the pre test- post test scores obtained from the lower dimensions of the Multiple Intelligence test by all 52 students in the study significantly differentiate or not, according to the variable of being in the experimental or control group.

The present study used the Mann-Whitney U test to determine whether the pre test- post test scores for the lower dimensions of the Multiple Intelligence test obtained by all 52 participating students differed significantly between the experimental and control groups.

4. Findings

4.1. Multiple intelligence fields of students affected by music lessons using active learning model

Table 1. Wilcoxon Test of Multiple Intelligences Test Results: Experimental Group Students

		N	SO	ST	z	p
Musical-Rhythmic	Pre-Test	26	13.90	69.50	-2.696	007*
	Post-Test	26	13.40	281.50		
Physical-Kinaesthetic	Pre-Test	26	7.38	29.50	-3.711	.000**
	Post-Test	26	14.61	321.50		
Logical-Mathematical	Pre-Test	26	7.30	36.50	-3.247	.001**
	Post-Test	26	13.87	263.50		
Visual-Spatial	Pre-Test	26	8.38	67.00	-2.574	.010*
	Post-Test	26	15.18	258.00		
Verbal-Linguistic	Pre-Test	26	4.75	19.00	-3.871	.000**
	Post-Test	26	14.57	306.00		
Interpersonal	Pre-Test	26	11.19	89.50	-1.733	.083
	Post-Test	26	13.16	210.50		
Intrapersonal	Pre-Test	26	10.71	150.00	-.649	.517
	Post-Test	26	16.75	201.00		
Naturalist	Pre-Test	26	10.71	75.00	-2.357	.018*
	Post-Test	26	13.89	250.00		

**P< 0.01 *P< 0.05

The analysis showed significantly higher post test scores for students in the experimental group, for all 6 dimensions except for interpersonal and intrapersonal intelligence. The results shows that the teaching methods used with the experimental group led to significantly increased performance in the 6 lower dimensions of the multiple intelligence test for students. Other studies in the literature also reported improved results in music classes that used educational approaches based on the multiple intelligence theory (Yücesan, 2008; Yeşilkaya, 2007; Demirkaya, 2006; Nacakcı, 2006; Marwah, 2005; McCullough, 2009; Bernard, 2005).

Table 2. Wilcoxon Test of Multiple Intelligences Test Results: Control Group Students

		N	SO	ST	z	p
Musical-Rhythmic	Pre-Test	26	9.61	86.50	-2.050	**.040***
	Post-Test	26	14.91	238.50		
Physical-Kinaesthetic	Pre-Test	26	9.00	18.00	-3.781	**.000****
	Post-Test	26	12.82	282.00		
Logical-Mathematical	Pre-Test	26	9.19	73.50	-2.198	**.028***
	Post-Test	26	14.16	226.50		
Visual-Spatial	Pre-Test	26	11.08	133.00	-.152	.879
	Post-Test	26	13.00	143.00		
Verbal-Linguistic	Pre-Test	26	11.43	80.00	-2.005	**.045***
	Post-Test	26	12.94	220.00		
Interpersonal-Social	Pre-Test	26	10.80	108.00	-1.719	.086
	Post-Test	26	15.19	243.00		
Intrapersonal	Pre-Test	26	12.25	122.50	-1.081	.280
	Post-Test	26	13.50	202.50		
Naturalist	Pre-Test	26	9.18	101.00	-1.406	.160
	Post-Test	26	15.31	199.00		

**P< 0.01 *P< 0.05

As a result of the analysis, while no differentiation was experienced between the pre test- post test scores of students on the remaining 4 dimensions, a significant difference was found in favor of the post test scores on the remaining 4 dimensions. While these results do not show any improvement in score for 4 of the lower dimensions of multiple intelligence tests of students even though no study was performed for the control group, they show that positive progress is experienced in the 4 lower dimensions.

Table 3. Mann Whitney U Test of Multiple Intelligences Pre-Test Scores of Students

		N	SO	ST	U	z	p
Musical-Rhythmic	Experimental	26	24.23	630.00	279.000	-1.082	.279
	Control	26	28.77	748.00			

Physical-Kinaesthetic	Experimental	26	21.79	566.50	215.500	-2.248	.025*
	Control	26	31.21	811.50			
Logical-Mathematical	Experimental	26	21.00	546.00	195.000	-2.624	.009**
	Control	26	32.00	832.00			
Visual-Spatial	Experimental	26	21.54	560.00	209.000	-2.366	.018*
	Control	26	31.46	818.00			
Verbal-Linguistic	Experimental	26	22.33	580.50	229.500	-1.989	.047*
	Control	26	30.67	797.50			
Interpersonal-Social	Experimental	26	23.29	605.50	254.500	-1.532	.125
	Control	26	29.71	772.50			
Intrapersonal	Experimental	26	23.44	609.50	258.500	-1.457	.145
	Control	26	29.56	768.50			
Naturalist	Experimental	26	24.67	641.50	290.500	-.870	.384
	Control	26	28.33	736.50			

**P< 0.01 *P< 0.05

Analysis of the results showed no significant difference in pre test scores between students in the experimental group and students in the control group on the 4 lower dimensions. This result shows that the scores obtained from the 4 lower dimensions of the multiple intelligence tests by students in the experimental and control groups were similar before the study. According to the pre test results, a significant difference is observed on the remaining 4 dimensions between experimental and control groups in favor of the control group.

Table 4. Mann Whitney Man Test Results for Multiple Intelligences Post-Test of Students

		N	**SO**	**ST**	**U**	**z**	**p**
Musical-Rhythmic	Experimental	26	26.25	682.50	331.500	-.119	.905
	Control	26	26.75	695.50			
Physical-Kinaesthetic	Experimental	26	24.04	625.00	274.000	-1.173	.241
	Control	26	28.96	753.00			
Logical-Mathematical	Experimental	26	23.92	622.00	271.000	-1.232	.218
	Control	26	29.08	756.00			
Visual-Spatial	Experimental	26	25.56	664.50	313.500	-.449	.653
	Control	26	27.44	713.50			
Verbal-Linguistic	Experimental	26	24.69	642.00	291.000	-.863	.388
	Control	26	28.31	736.00			
Interpersonal-Social	Experimental	26	24.10	626.50	275.500	-1.146	.252
	Control	26	28.90	751.50			
Intrapersonal	Experimental	26	22.31	580.00	229.000	-1.999	**.046***
	Control	26	30.69	798.00			
Naturalist	Experimental	26	26.08	678.00	327.000	-.202	.840
	Control	26	26.92	700.00			

*P< 0.05

Analysis of the results showed no significant difference in post test scores between students in the experimental group and students in the control group, except for one lower dimension. Considering that significant differences were revealed in the pre test results in favor of the control group, the results shown in Table 3 suggest that this equal baseline performance was changed after application of the teaching methods and the experimental group made significantly better progress than the control group. These results show that the scores obtained by students in the experimental and control groups on the lower dimensions of multiple intelligence tests are similar after the study.

4.2 Comparison of pre test-post test musical-rhythmic intelligence scores of experimental and control groups of the music teacher

As a result of the analysis, a significant difference was found between the pre test-post test scores of the musical rhythmic dimension of students in the experimental group, directed at the perceptions of their music teacher in favor of the post test scores ($z=-2.76$. $p<0.01$).

This study is among the first studies performed for the purpose of determining the active learning models and multiple intelligence fields of primary school students receiving general music education lessons in Turkey.

4.3. Comparison of pre test- post test scores of experimental and control groups of parents

As a result of the analysis, no significant difference was found between the pre test-post test scores of students in the experimental and control group, directed at the perceptions of their families.

5. Conclusion

According to the findings of this study, educational approaches that include multiple intelligence activities based on active learning result in more effective and permanent learning outcomes. The analysis showed a significant difference in the lower dimensions of multiple intelligence of the experimental and control groups. The experimental group showed a more homogenous structure in terms of pre test-post test results. Students who were taught using the active learning model became happier and more successful in the music lesson. In addition, more permanent learning outcomes were observed among students taught using the active learning model, which is based on the work of Orff and the Multiple Intelligence Theory.

The results of the pre test-post test performed on the music teacher in the study indicated positive progress in the lower dimension of musical-rhythmic intelligence of students in the experimental group. On the other hand, according to the results of pre test-post test performed in the control group, no differentiation was found in the lower dimension of musical-rhythmical intelligence of students.

In terms of the parent profile, it was observed that the lower social and economic specialties of parents in the study do not make any contribution to the multiple intelligence fields of students. This result actually showed the important role of parents in the academic success of students. The importance of teacher -parent cooperation is also obvious in the school success of students.

One common opinion on the active learning model is that it is difficult to apply, especially within public schools, which generally causes music teachers to prefer conventional teaching methods. However, this study has revealed that music lessons are appropriate for the active learning model, which could be performed even in a crowded classroom environment and that students more easily achieved permanent learning outcomes in an entertaining learning environment.

6. Suggestions

Studies on Multiple Intelligence should be incorporated into primary school music lessons, and educational materials, including musical records and such activities, should be provided. In addition, it is suggested that school and regional administrators fully support the use of multiple intelligence approaches in musical activities.

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