



Examination of the Effect of Drama Education on Multiple Intelligence Domains of Children Attending to 5TH Grade *

Zahide Dalbudak Pekdemir ¹, Aysel Köksal Akyol ²

Abstract

The purpose of the present study was to assess the multiple intelligence domains of the children attending to 5th grade and ascertain whether the drama education made a difference regarding verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal-social, intrapersonal-internal and naturalistic intelligence domains of children. The study group was comprised of a total of 65 children, assigned to the experimental group (n=30) and the control group (n=35), attending to the 5th grade of two secondary schools at Altındağ Neighborhood of Ankara Province. "General Information Form" and "Self-Assessment Scale in Multiple Intelligence Domains" were used in the study for the purpose of data collection. The experimental group received "Drama Education Plan." Data obtained in accordance thereof were assessed by *t*-test and ANOVA test.

As a result of the study no significant difference was found between pretest and posttest scores of children in the experimental and control groups regarding verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal-social, intrapersonal-internal, and naturalistic intelligence subdomains of the "Self-Assessment Scale in Multiple Intelligence Domains" ($p>0.05$). It was found that there was a significant difference between pretest and posttest scores of children regardless of their groups in visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal-social, and naturalistic intelligence subdomains of the "Self-Assessment Scale in Multiple Intelligence Domains" ($p<0.05$).

Keywords

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Introduction

Drama is a teaching method of enhancing gains in cognitive competences, affective properties, and psychomotor skills. It is also a field of arts education improving the formation of an integral and aesthetical understanding primarily for sensory training. Finally, drama is a discipline, which helps, thanks to its explanatory and controlling opportunities, with describing the processes as they are

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¹ Ayla Abla Day Care Center, Turkey, zdalbudak@gmail.com

² Ankara University, Faculty of Health Sciences, Department of Child Development, Turkey, koksalayssel@gmail.com

experienced. As a teaching method, a field of arts education, and a discipline, drama is also effective in assistance of multiple intelligence fields. Upon review of the attainments as a result of drama practices, it is seen that many behaviours, attitudes, or skills overlap with multiple intelligence fields, and that such processes of multiple intelligences as implementation, result obtaining, assessment, and redevelopment are perfect fields of application for drama (Armstrong, 2000; Güneysu, 2002; Köksal Akyol, 2003; Gardner, 2004; McCaslin, 2006; Johnson, 2007; Bowles, 2008; Adıgüzel, 2010; Saban, 2010; Can Yaşar, 2013).

Today the objective of the education system is to raise individuals, who are constructive, creative, open for novelties, able to express oneself, and have the analysis and synthesis skills. Drama is one of the methods which play an important role in learning within educational system. The main purpose of drama, which allow children to travel between the real and imaginary worlds is to raise individuals, who are creative in all fields, self-sufficient, self-aware, able to establish and develop communication with one's environment, and with enhanced ability and forms of self-expression (Kandır, 2003a; Köksal Akyol, 2003; Brewer, 2007; Adıgüzel, 2010; Can Yaşar, 2013).

Education is defined as a multidimensional construct, which allows the individual to realize one's personal development. Intelligence is a complex ability of human brain. In other words it is a compound of skills that emerges as a result of harmonious operation of several skills of the mind (Yörükoğlu, 1997; Selçuk, 1999; Gardner, 2004). Until the 1980s intelligence had been seen as a single general ability. In 1983, Gardner via his "Theory of Multiple Intelligences" called abilities of individuals developed in different fields as "modalities of intelligence." Studies by Gardner underscored that intelligence could not be explained by a single factor, since it included different abilities and it was multi-aspect (Güneysu; 2002; Gardner, 2004). Gardner insisted that not every child had the same interests and skills, and learn in the same way that everyone could learn via different ways (Gögebakan, 2003; Gardner, 2004). Theory of multiple intelligences cover verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal-social, intrapersonal-introspective, and naturalistic intelligence domains (Kandır, 2003a; Kandır, 2003b; Gardner, 2004; Saban, 2010).

A review of relevant literature provides that a number of studies have already been conducted as regards drama education. Kocayörük (2000) and Schiller (2008) suggested in their studies that drama education was effective in development of the social skill levels of children. Joronen, Hakamies and Astedt Kurki (2011) showed that drama improved development and variation of social and emotional learning in children. Hui and Lau (2006), and Hui, Cheung, Wong and He (2011) observed that drama education was associated with an increase in creativity scores of the first and fourth graders at primary school, and preschoolers, respectively. Furthermore Duatepe (2004), Kayhan (2004), Soner (2005), and Hatipoğlu (2006) applied drama method in teaching certain topics of mathematics and found that drama education was associated with a significant difference in terms of success in the said mathematical topics between the experimental group and the control group in favor of the experimental group. A review of studies as regards the fields of multiple intelligences provides that similar studies were conducted at the level of primary education. Akamca (2003) and Turhan (2006) applied the theory of multiple intelligences in teaching Science course subjects to primary education children and as a result of the study they found that children enjoyed the Science course and developed positive attitude towards science. Linda (2004) adopted multiple intelligences approach to improve the academic success of fourth graders in science and concluded that children developed positive attitude towards learning science and a significant development was attained in success and self-confidence of children. Buschick, Shipton, Winner and Wise (2007) found that reading skills of primary education children was improved by multiple intelligences approach. Chan (2007) investigated the relationship between leadership and multiple intelligences and found that education based on multiple intelligences approach supported the leadership traits of children. Keskin (2009) investigated the effect of classroom plays on development of multiple intelligence domains in children and concluded that each child discovered one's special skills and developed oneself in the said domains thanks to the plays. These studies on drama and multiple intelligences emphasize the positive effects on children. There are a number of separate studies on multiple intelligences and drama. However only a limited number of studies investigated drama and multiple intelligences together. Karabağ (2007) found in his study that aimed to discover the relationships between multiple intelligences, drama, and constructivist approach that the predetermined objectives were attained via drama education as a result of the study.

Based on the idea that drama education would prove to be an effective method in improving the multiple intelligences field of children, this study was launched to support the musical–rhythmic, visual–spatial, verbal–linguistic, logical–mathematical, bodily–kinesthetic, interpersonal, intrapersonal, and naturalistic intelligence fields of children.

Material and Methods

Study Group

The study group was comprised of a total of 65 voluntary students attending to two official secondary schools in Altındağ District of Ankara city center, in which 30 children enrolled in the experimental group and 35 children in the control group.

Data Collection Tools

The following tools were used in the study: A “General Information Form” as developed by the researches with an aim to collect certain information about the children and their families, and “Scale for Self-Assessment in Multiple Intelligence Domains” as developed, and reliability and validity of which tested by Seber (2001) with an aim to assess the multiple intelligence domains of children. The scale includes a total of 64 items, with 8 items each for the verbal–linguistic, logical–mathematical, visual–spatial, bodily–kinesthetic, musical–rhythmic, interpersonal-social, intrapersonal-introspective, and naturalistic intelligence domains. Items as regards the intelligence domains are provided disordered in the scale. The answers to the items of the scale are grouped in three sections: “Yes,” “Partly,” and “No,” and that respective points are determined as 3, 2, and 1. The minimum and maximum score as per domain is 8, and 24, respectively. The higher the score, the higher is the indication that the relevant domain of intelligence is strong, and vice versa. “The research results obtained with the data analysis indicated that the scale developed in this study which has eight dimensions and each dimensions has 8 items all together consisted of 64 items is a valid and reliable scale, and can be used by the fifth grade students of basic education school in order to self-assessment and to test their strengths and weaknesses in the field of multiple-intelligences. A total of 380 children and 13 teachers were involved in the development of the scale. Expert opinion was sought for content validity and factor analysis was conducted for construct validity. For the prediction validity, the relationship between the responses of 126 students whom were neutrally chosen from the sample and the evaluation carried out by those students' teachers was calculated by using the Pearson's Product-Moment Correlation Coefficient. The relationship between the scores at 0.01 level was considered to be significant for the predictive validity of the scale. “Seber applied the reliability of the research scale, Test- Retest Reliability and internal-reliability approaches to test the reliability of the scale and that internal- reliability was analyzed with the use of Split-half and Cronbach Alpha techniques.” The internal-reliability of the items include in the subdomains of the scale was interpreted as per the 0.60 measure. The reliability coefficients as regards the subdomains were found to be 0.77 – 0.97 in accordance with the test – retest reliability results (Seber, 2001).

Data Collection Method

First the prior permission of the relevant institutions were obtained for the study. “Scale for Self-Assessment in Multiple Intelligence Domains” was applied as a pretest to the children enrolled in the experimental and control groups. Subsequent to the pretests, the Drama Plan as prepared by the researchers and finalized upon expert opinions was conducted with the children in the experimental group. **Drama plan was implemented by the researcher.** During the course of the study, the experimental group was involved in a total of 30 drama activities twice a week, 2 hours a day (80 minutes) for 15 days. Children in the control group continued with the educational program of the Ministry of National Education. Upon completion of the Drama Plan, “Scale for Self-Assessment in Multiple Intelligence Domains” was applied as a post-test to the children enrolled in the experimental and control groups.

The drama plans as prepared for the study aimed to support and improve the fields of multiple intelligences in children attending to the fifth grade. The drama plan involved in activities aimed to support the verbal–linguistic, logical–mathematical, visual–spatial, bodily–kinesthetic, musical–rhythmic, interpersonal, intrapersonal, and naturalistic intelligences. Thirty drama plans were prepared and submitted to the opinion of eleven experts.

Analysis of Data

Parametric statistics were used to test the objectives of the study during the analysis of data collected by the Scale for Self-Assessment in Multiple Intelligence Domains. The method of data analysis was determined in line with the results of the descriptive statistics and normality test (Büyüköztürk, 2009). It was found that the pretest and posttest scores of children from the Scale for Self-Assessment in Multiple Intelligence Domains had normal distribution in accordance with the results of the Kolmogorov – Smirnov Test of Normality. Therefore the scores of the Scale for Self-Assessment in Multiple Intelligence Domains were assessed by parametric statistics. The significance of the difference between the average pretest scores of experimental group and control group children as obtained from the Scale for Self-Assessment in Multiple Intelligence Domains was tested by the *t*-test. Due to the unrelated measurements and time-dependent repeated measurements as regards the experimental and control groups, the efficiency of the experimental process (drama education) was tested by two-factor ANOVA for mixed measurements (Büyüköztürk, 2012).

Findings and Discussion

The present study aimed to investigate the multiple intelligence domains of the fifth grader children and to find whether the drama education induced a difference in the intelligence domains of the children. The findings of the study were presented in tables and discussed as supported by the relevant literature.

The results of the *t*-test showed that there was no significant difference between the experimental and control groups as regards the pretest scores obtained from the domains of Verbal–Linguistic Intelligence [$t(63)=0.339$, $p>0.05$], Logical–Mathematical Intelligence [$t(63)= 1.963$, $p>0.05$], Visual–Spatial Intelligence [$t(63)= 1.124$, $p>0.05$], Bodily–Kinesthetic Intelligence [$t(63)= 0.254$, $p>0.05$], Musical–Rhythmic Intelligence [$t(63)= 0.864$, $p>0.05$], Interpersonal–Social Intelligence [$t(63)= 0.409$, $p>0.05$] and Intrapersonal–Introspective Intelligence [$t(63)= 0.583$, $p>0.05$]. There was a significant difference between the pretest scores of the experimental and control groups as regards the Naturalistic Intelligence [$t(63)= 2.10$, $p<0.05$]. This finding suggested that the experimental and control groups could be considered not equivalent as regards the pretest scores from Naturalistic Intelligence. The pretest scores of the control group ($X= 20.34$) was higher than that of the experimental group ($X=18.73$) as regards the Naturalistic Intelligence domain.

Table 1. Pretest-Posttest Mean Scores of Children Rolled in the Experimental and Control Groups, Standard Deviations, and ANOVA Results for Mean Scores as Regards the Verbal–Linguistic Intelligence Subdomain of the Scale For Self-Assessment in Multiple Intelligence Domains

| GROUP | N | PRETEST | | POSTTEST | | |
|--------------------------------|--------------|----------|--------------|--------------|--------------|--------------|
| | | X | S | X | S | |
| Experimental | 30 | 19.07 | 2.66 | 20.1 | 3.03 | |
| Control | 35 | 19.29 | 2.54 | 19.6 | 3.27 | |
| SOURCE OF VARIANCE | KT | Sd | KO | F | P | η^2 |
| Between participants | 473.493 | 64 | | | | |
| Group (Experimental/Control) | 0.638 | 1 | 0.638 | 0.085 | 0.772 | 0.001 |
| Error | 472.855 | 63 | 7.506 | | | |
| Within participants | 602.099 | 65 | | | | |
| Measurement (Pretest-Posttest) | 14.668 | 1 | 14.668 | 1.584 | 0.213 | 0.025 |
| Group*Measurement | 4.176 | 1 | 4.176 | 0.451 | 0.504 | 0.007 |
| Error | 583.255 | 63 | 9.258 | | | |
| Total | 1075.592 | 129 | | | | |

($p>0.05$)

A review of Table 1 provided that there was no significant difference between the pre- and post-experiment scores as regards the Verbal–Linguistic Intelligence domain of children with and without drama education and that the common effect of whether drama education was received or not and repeated measurement factors on the Verbal–Linguistic Intelligence domain scores was not

significant [$F(1,63)=0.451, p>0.05$]. It was found upon a review of group main effect regardless of the change in groups between the pretest and posttest that there was no significant difference between the mean total Verbal–Linguistic Intelligence domain scores of experimental and control group children as obtained by repeated measurements [$F(1,63)=0.085, p>0.05$]. It was found upon a review of group main effect regardless of the children’s groups that there was no significant difference between the pre- and post-experiment mean Verbal–Linguistic Intelligence domain scores [$F(1,63)=1.584, p>0.05$]. Verbal–linguistic intelligence is the capacity of an individual to make effective use of the notions of one’s language verbally like a storyteller, speaker, or politician, or in written form like a poet, author, or journalist (Armstrong, 1994; Saban, 2002; Armstrong, 2000; Gardner, 2004; Selçuk, Kayalı, & Okut, 2004; Yuen & Furnham, 2005; Bowles, 2008; Esler & Rule, 2008). It was found that there was no improvement in the experimental group children as regards verbal–linguistic intelligence domain. However, several methods and techniques used in drama such as improvisation, writing while playing, preparing newspapers, leaflets etc. is known to have supported the verbal-linguistic intelligence. It could be concluded that drama education did not induce an improvement in children’s verbal-linguistic intelligence domain taking into consideration the fact that the drama education was planned so as to include also the other intelligence domains along with the verbal–linguistic intelligence domain, or in other words, designed so as to support the eight intelligence domains but not a single domain, and that the duration of drama education was short. Susar Kırmızı (2008) conducted a study regarding the effect of drama education on fourth graders’ attitude towards reading. The children enrolled in the experimental received a program based on drama method as regards attitude towards reading, and the children in the control group received the Turkish language course program. The duration of the drama education aiming to improve the attitude of children towards reading was limited to seven weeks. It was found as a result of the study that there was no significant difference between the experimental and control groups regarding attitude towards reading.

Table 2. Pretest-Posttest Mean Scores of Children Enrolled in the Experimental and Control Groups, Standard Deviations, and ANOVA Results For Mean Scores as Regards the Logical-Mathematical Intelligence Subdomain of the Scale for Self-Assessment in Multiple Intelligence Domains

| GROUP | N | PRETEST | | POSTTEST | | |
|--------------------------------|---------------|----------|---------------|--------------|--------------|--------------|
| | | X | S | X | S | |
| Experimental | 30 | 18.47 | 2.92 | 20.17 | 3.18 | |
| Control | 35 | 19.74 | 2.32 | 19.63 | 2.94 | |
| SOURCE OF VARIANCE | KT | Sd | KO | F | P | η^2 |
| Between participants | 531.969 | 64 | | | | |
| Group (Experimental/Control) | 4.400 | 1 | 4.400 | 0.525 | 0.471 | 0.008 |
| Error | 527.569 | 63 | 8.374 | | | |
| Within participants | 537.816 | 65 | | | | |
| Measurement (Pretest-Posttest) | 20.309 | 1 | 20.309 | 2.606 | 0.111 | 0.040 |
| Group*Measurement | 26.586 | 1 | 26.586 | 3.412 | 0.069 | 0.051 |
| Error | 490.921 | 63 | 7.792 | | | |
| Total | 1069.785 | 129 | | | | |

($p>0.05$)

There was no significant difference between the pre- and post-experiment scores as regards the Logical-Mathematical Intelligence domain of children with and without drama education and that the common effect of whether drama education was received or not and repeated measurement factors was not significant [$F(1,63)=3.412, p>0.05$]. It was found upon a review of group main effect

regardless of the change in groups between the pretest and posttest that there was no significant difference between the mean total Logical-Mathematical Intelligence domain scores of experimental and control group children as obtained by repeated measurements [$F(1,63)=0.525$, $p>0.05$]. It was found upon a review of group main effect regardless of the children's groups that there was no significant difference between the pre- and post-experiment mean Logical-Mathematical Intelligence domain scores [$F(1,63)=2.606$, $p>0.05$]. The findings of the present study, which investigated the effect of drama education on multiple intelligence domains, suggested that there was no improvement in the logical-mathematical intelligence domain of children with or without drama education. In other words, there was no change in the mathematical skills of children, whether they received drama education or not. Logical-Mathematical Intelligence was described as the intelligence of numbers and reasoning. It was also described as the intelligence of reasoning by induction and deduction, the skill of understanding the complex relationship between abstract concepts and ideas, or the intelligence to seek for similar aspects (Armstrong, 2000; Sevinç, 2003; Gardner, 2004; Selçuk et al., 2004; Yuen & Furnham, 2005; Karadağ, 2008; Saban, 2010). Hatipoğlu (2006) performed a study titled as the "Effect of Drama Method on Teaching Primary Education Fifth Grade Mathematics Course Subjects on Student Success." In that study, the experimental group received education based on drama method to attain the objectives of "Numbers in Our Life," and "Geometric Shapes" chapters, where the control group continued with traditional education. It was found as a result of the study that there was no significant difference between the experimental and control groups.

Table 3. Pretest-Posttest Mean Scores of Children Enrolled in the Experimental and Control Groups, Standard Deviations, and ANOVA Results for Mean Scores as Regards the Visual-Spatial Intelligence Subdomain of The Scale for Self-Assessment in Multiple Intelligence Domains

| GROUP | N | PRETEST | | | POSTTEST | |
|--------------------------------|---------------|----------|---------------|--------------|--------------|--------------|
| | | X | S | X | S | |
| Experimental | 30 | 19.1 | 2.75 | 21.17 | 2.68 | |
| Control | 35 | 19.83 | 2.48 | 20.69 | 2.44 | |
| SOURCE OF VARIANCE | KT | Sd | KO | F | P | η^2 |
| Between participants | 399.8 | 64 | | | | |
| Group (Experimental/Control) | 0.495 | 1 | 0.495 | 0.078 | 0.781 | 0.001 |
| Error | 399.305 | 63 | 6.338 | | | |
| Within participants | 518.939 | 65 | | | | |
| Measurement (Pretest-Posttest) | 69.047 | 1 | 69.047 | 9.930 | 0.002 | 0.136 |
| Group*Measurement | 11.816 | 1 | 11.816 | 1.699 | 0.197 | 0.026 |
| Error | 438.076 | 63 | 6.954 | | | |
| Total | 918.739 | 129 | | | | |

($p>0.05$)

There was no significant difference between the pre- and post-experiment scores as regards the Visual-Spatial Intelligence domain of children enrolled in the experimental and control groups [$F(1,63)=1.699$, $p>0.05$]. It was found upon a review of group main effect regardless of the change in groups between the pretest and posttest that there was no significant difference between the mean total Visual-Spatial Intelligence domain scores of experimental and control group children as obtained by repeated measurements [$F(1,63)=0.078$, $p>0.05$]. It was found upon a review of group main effect regardless of the children's groups that there was a medium scale significant difference between the pre- and post-drama education mean Visual-Spatial Intelligence domain scores [$F(1,63)=9.930$, $p<0.05$ and $\eta^2=0.136$]. Educational programs place special emphasis on developing children's esthetic understanding and creativity (Adıgüzel, 2007). Hui and Lau (2006) in their study titled as "Drama education: A touch of the creative mind and communicative-expressive ability of elementary school children in Hong Kong" found that drama education contributed in creative drawing field. There are other studies, which investigated the effect of drama education on development of different skills that might be associated with visual-spatial intelligence. Yüksel (2005) found that drama education had a positive effect on the design and visual reading skills of children. Kaya (2006) taught Visual Arts Education course by the help of drama method and found that drama method helped children with becoming ready to paint, concentrating on painting, and making comments, which express their imagination and creativity. Kartopu (2006) investigated the effect of drama method in Painting courses and found that drama method positively contributed in the form, color, and expression of children's paintings. Aykaç (2007) found that drama method as applied in Art Activities course increased the pleasure of children. It was suggested that long-term and separate educational practices towards each intelligence domain might be effective in development of intelligence domains. Indeed, the studies by Kaya (2006), Kartopu (2006) and Hatipoğlu (2006) investigated the effects of drama only on a single field, such as mathematics and painting.

Table 4. Pretest-Posttest Mean Scores of Children Enrolled in The Experimental and Control Groups, Standard Deviations, and ANOVA Results for Mean Scores as Regards the Bodily-Kinesthetic Intelligence Subdomain of The Scale for Self-Assessment in Multiple Intelligence Domains

| GROUP | N | PRETEST | | POSTTEST | | |
|--------------------------------|--------------|----------|--------------|--------------|--------------|--------------|
| | | X | S | X | S | |
| Experimental | 30 | 18.57 | 2.85 | 19.93 | 2.95 | |
| Control | 35 | 18.37 | 3.27 | 19.4 | 3.20 | |
| SOURCE OF VARIANCE | KT | Sd | KO | F | P | η^2 |
| Between participants | 558.123 | 64 | | | | |
| Group (Experimental/Control) | 4.287 | 1 | 4.287 | 0.488 | 0.488 | 0.008 |
| Error | 553.836 | 63 | 8.791 | | | |
| Within participants | 693.231 | 65 | | | | |
| Measurement (Pretest-Posttest) | 46.339 | 1 | 46.339 | 4.519 | 0.037 | 0.067 |
| Group*Measurement | 0.923 | 1 | 0.923 | 0.090 | 0.765 | 0.001 |
| Error | 645.969 | 63 | 10.253 | | | |
| Total | 1251.354 | 129 | | | | |

($p>0.05$)

A review of Table 4 provided that there was no significant difference between the pre- and post-experiment scores as regards the Bodily–Kinesthetic Intelligence domain of children with and without drama education [$F(1,63)=0.09$ $p>0.05$]. The analysis also tested the main effects of the groups and measurements. It was found upon a review of group main effect regardless of the change in groups between the pretest and posttest that there was no significant difference between the mean total Bodily–Kinesthetic Intelligence domain scores of experimental and control group children as obtained by repeated measurements [$F(1,63)=0.488$, $p>0.05$]. It was found upon a review of group main effect regardless of the children’s groups that there was a medium scale significant difference between the pre- and post-experiment mean Bodily–Kinesthetic Intelligence domain scores [$F(1,63)=4.519$, $p<0.05$ and $\eta^2=0.067$]. This finding suggested that the changes as observed in children from the pretest to the posttest were significant. On the other hand, it was found in this study that bodily-kinesthetic skills of children attending to the fifth grade improved regardless of whether they received drama education or not. It is known that primary education programs also takes into consideration the theory of multiple intelligences along with different approaches. There are studies which investigated whether the drama method had any effect on bodily-kinesthetic skills. Soytürk (2007) found in a study, which aimed to support the movement skills of children aging 9-11 years, found that movement skills of the experimental group improved compared to the control group. Wee (2009) suggested that kinesthetic discoveries of children developed in a well-defined drama course structure composed of warm-up, main activity, and finalization sections. Although the studies by Soytürk (2007) and Wee (2009) suggested that drama improved bodily-kinesthetic skills, the present study concluded that drama education had no effect. This finding could be explained by the content of the drama education; the present drama education aimed to support other intelligence domains as well besides the bodily-kinesthetic intelligence domain.

Table 5. Pretest-Posttest Mean Scores of Children Enrolled in the Experimental and Control Groups, Standard Deviations, and ANOVA Results for Mean Scores as Regards the Musical–Rhythmic Intelligence Subdomain of the Scale for Self-Assessment in Multiple Intelligence Domains

| GROUP | N | PRETEST | | POSTTEST | | |
|--------------------------------|---------------|----------|---------------|--------------|--------------|--------------|
| | | X | S | X | S | |
| Experimental | 30 | 18.47 | 3.23 | 20.47 | 2.76 | |
| Control | 35 | 17.71 | 3.71 | 18.43 | 3.82 | |
| SOURCE OF VARIANCE | KT | Sd | KO | F | P | η^2 |
| Between participants | 889.969 | 64 | | | | |
| Group (Experimental/Control) | 62.893 | 1 | 62.893 | 4.791 | 0.032 | 0.071 |
| Error | 827.076 | 63 | 13.128 | | | |
| Within participants | 736.428 | 65 | | | | |
| Measurement (Pretest-Posttest) | 59.505 | 1 | 59.505 | 5.649 | 0.021 | 0.082 |
| Group*Measurement | 13.352 | 1 | 13.352 | 1.268 | 0.264 | 0.020 |
| Error | 663.571 | 63 | 10.533 | | | |
| Total | 1626.397 | 129 | | | | |

($p>0.05$)

There was no significant difference between the pre- and post-experiment scores as regards the Musical-Rhythmic Intelligence domain of children with and without drama education [$F(1,63)=1.268$ $p>0.05$]. Yet it was found upon a review of group main effect regardless of the change in groups between the pretest and posttest that there was a significant difference between the mean total Musical-Rhythmic Intelligence domain scores of experimental and control group children as obtained by repeated measurements [$F(1,63)=4.791$, $p<0.05$ and $\eta^2=0.071$]. It was found upon a review of group main effect regardless of the children's groups that there was a medium scale significant difference between the pre- and post-experiment mean Musical-Rhythmic Intelligence domain scores [$F(1,63)=5.649$, $p<0.05$ and $\eta^2=0.082$]. This finding suggested that although the changes as observed in children from the pretest to the posttest were significant, there was no clear information as regards the source of the variation. The fact that the group and repeated measurement main effects were significant, where the common effect was not, suggested that the effect of experimental process on the attitudes of children was not definite. A study by Yağcı (1995) on the effect of drama on musical education observed that drama was an effective method to attain the musical attitudes set in musical education. Önder (2007) concluded that learning levels of children increased as a result of combined application of musical education and drama. However, the present study found that experimental process was not effective in the development of musical skills. This finding can be explained by the fact that activities towards development of musical-rhythmic intelligence were not sufficiently involved in the present drama education program.

Table 6. Pretest-Posttest Mean Scores of Children Enrolled in The Experimental and Control Groups, Standard Deviations, and ANOVA Results for Mean Scores as Regards the Interpersonal-Social Intelligence Subdomain of the Scale For Self-Assessment in Multiple Intelligence Domains

| GROUP | N | PRETEST | | | POSTTEST | |
|--------------------------------|--------------|----------|--------------|--------------|--------------|--------------|
| | | X | S | X | S | |
| Experimental | 30 | 18.90 | 3.17 | 19.87 | 3.27 | |
| Control | 35 | 18.57 | 3.28 | 19.91 | 3.25 | |
| SOURCE OF VARIANCE | KT | Sd | KO | F | P | η^2 |
| Between participants | 673.693 | 64 | | | | |
| Group (Experimental/Control) | 0.638 | 1 | 0.638 | 0.060 | 0.808 | 0.001 |
| Error | 673.055 | 63 | 10.683 | | | |
| Within participants | 696.651 | 65 | | | | |
| Measurement (Pretest-Posttest) | 43.082 | 1 | 43.082 | 4.160 | 0.046 | 0.062 |
| Group*Measurement | 1.143 | 1 | 1.143 | 0.110 | 0.741 | 0.002 |
| Error | 652.426 | 63 | 10.356 | | | |
| Total | 1370.344 | 129 | | | | |

($p>0.05$)

A review of Table 6 provided that there was no significant difference between the pre- and post-experiment scores as regards the Interpersonal-Social Intelligence domain of children with and without drama education and that the common effect of whether drama education was received or not and repeated measurement factors on the Interpersonal-Social Intelligence domain scores was not significant [$F(1,63)=0.110$ $p>0.05$]. This finding suggested that whether or not drama education was received had no effect in increasing the Interpersonal-Social Intelligence scores. Analysis also tested the main effects of group and measurements. It was found upon a review of group main effect regardless of the change in groups between the pretest and posttest that there was no significant difference between the mean total Interpersonal-Social Intelligence domain scores of experimental and control group children as obtained by repeated measurements [$F(1,63)=0.060$, $p>0.05$]. It was concluded that there was no significant difference between the mean Interpersonal-Social Intelligence

scores children enrolled in the experimental and control groups regardless of change from the pretest to the posttest. It was found upon a review of group main effect regardless of the children's groups that there was a medium scale significant difference between the pre- and post-drama education mean Interpersonal-Social Intelligence domain scores [$F(1,63)=4.160$, $p<0.05$ and $\eta^2=0.062$]. This finding suggested that although the changes as observed in children from the pretest to the posttest were significant, there was no clear information as regards the source of the variations. In other words although the result of the repeated measurement main effect test was significant, there was no definite conclusion as regards the effect of drama education on the Interpersonal-Social Intelligence domain.

Yassa (1999) found in a study on adolescents that drama activity provided a perspective as regards the common behaviors and attitudes in interpersonal daily relations and in many cases participation in drama activity improved social interaction and self-confidence. Kaf (1999) investigated the effect of drama method in acquisition of certain social skills in Lie Science course and concluded that drama method was effective in acquisition of greeting and sharing-cooperation skills in the Life Science course. Similarly, Kocayörük (2000) investigated the effect of drama in development of primary school children's social skills and found that the education program applied in the scope of the study was effective in developing social skill levels of children. Akoğuz (2002) found as a result of drama activity with children aging 9-13 years that there was a significant change in the communicative skills of children. Schiller (2008) concluded that use of drama in teaching social skills to risk group children attending to state secondary school was a very effective method. It was seen that children that received drama education was more successful at school, more consistent with attendance, approached others with empathy, and had higher self-confidence. McLennan (2008) observed that thanks to drama education children were more successful in creating and reflecting upon social problems and discovering personal and social issues. Joronen et al. (2011) underscored that drama education was associated with a high level of awareness in fourth and fifth graders as regards social and emotional learning. According to Aytaş (2013) traditional methods are not sufficient solely for the knowledge as provided to children in formal education settings can transform into behaviors. The present study involved activities regarding the interpersonal-social intelligence domain; however it was seen also in the control group that the teacher's guidebook especially for the Social Science course recommended the use of drama as a method for teaching.

Table 7. Pretest-Posttest Mean Scores of Children Enrolled in the Experimental and Control Groups, Standard Deviations, and ANOVA Results for Mean Scores as Regards the Intrapersonal-Introspective Intelligence Subdomain of the Scale for Self-Assessment in Multiple Intelligence Domains

| GROUP | N | PRETEST | | | POSTTEST | |
|--------------------------------|--------------|----------|--------------|--------------|--------------|--------------|
| | | X | S | X | S | |
| Experimental | 30 | 19.87 | 2.57 | 20.40 | 2.69 | |
| Control | 35 | 20.23 | 2.43 | 20.34 | 2.67 | |
| SOURCE OF VARIANCE | KT | Sd | KO | F | P | η^2 |
| Between participants | 466.969 | 64 | | | | |
| Group (Experimental/Control) | 0.750 | 1 | 0.750 | 0.101 | 0.751 | 0.002 |
| Error | 466.219 | 63 | 7.400 | | | |
| Within participants | 381.311 | 65 | | | | |
| Measurement (Pretest-Posttest) | 3.388 | 1 | 3.388 | 0.567 | 0.454 | 0.009 |
| Group*Measurement | 1.418 | 1 | 1.418 | 0.237 | 0.628 | 0.004 |
| Error | 376.505 | 63 | 5.976 | | | |
| Total | 848.28 | 129 | | | | |

($p>0.05$)

There was no significant difference between the pre- and post-research scores as regards the Intrapersonal-Introspective Intelligence domain of children with and without drama education and that the common effect of whether drama education was received or not and repeated measurement factors on the Intrapersonal-Introspective Intelligence domain scores was not significant [$F(1,63)=0.237, p>0.05$]. Accordingly it was concluded that whether or not drama education was received was not effective in increasing the Intrapersonal-Introspective Intelligence domain scores. It was found upon a review of group main effect regardless of the change in groups between the pretest and posttest that there was no significant difference between the mean total Interpersonal-Social Intelligence domain scores of experimental and control group children as obtained by repeated measurements [$F(1,63)=0.101, p>0.05$]. This finding suggested that there was no significant difference between the mean scalescores of the children enrolled in the experimental and control groups regardless of change from the pretest to the posttest. It was found upon a review of repeated measurements main effect regardless of the children's groups that there was no significant difference between the pre- and post-experiment mean Interpersonal-Social Intelligence domain scores [$F(1,63)=0.567, p>0.05$]. This finding indicated that time-dependent changes observed in children were not significant.

According to Gardner (2004) the original form of the intrapersonal-introspective intelligence emerges as early as the infancy. For Armstrong (2000) intrapersonal-introspective intelligence is the ability of an individual to recognize oneself and demonstrate behaviors in harmony with the environment in the light of self-knowledge and understanding. Intrapersonal-introspective intelligence is self-awareness, awareness as regards what he/she is, what he/she wants to do, and how he/she should behave under certain conditions, and accordingly making right decisions in his/her life (Saban, 2010). The main purpose of drama is to raise individuals, who are creative in all fields, self-sufficient, self-aware, able to establish and develop communication with one's environment, and with enhanced ability and forms of self-expression. Besides the aforementioned objectives, drama influences development of such skills as critical thinking, self-confidence, and decision-making, and support self-awareness of children (Adıgüzel, 2000; Köksal, 2007). Indeed, Uşaklı (2006) concluded that drama education was not effective in improving the self-respect in children attending to the fifth grade. However, drama education as applied towards developing all domains of intelligence had no effect on the intrapersonal-introspective intelligence as with the other domains of intelligence. Changing behaviors require long-term activities. That's why the present study might have concluded that there was no significant difference between the groups as regards the intrapersonal-introspective intelligence domain.

Table 8. Pretest-Posttest Mean Scores of Children Enrolled in the Experimental and Control Groups, Standard Deviations, and ANOVA Results for Mean Scores as Regards the Naturalistic Intelligence Subdomain of the Scale for Self-Assessment in Multiple Intelligence Domains

| GROUP | N | PRETEST | | | POSTTEST | |
|--------------------------------|--------------|----------|--------------|--------------|--------------|--------------|
| | | X | S | X | S | |
| Experimental | 30 | 18.73 | 3.56 | 20.47 | 3.51 | |
| Control | 35 | 20.34 | 2.60 | 21.49 | 2.65 | |
| SOURCE OF VARIANCE | KT | Sd | KO | F | P | η^2 |
| Between participants | 613.693 | 64 | | | | |
| Group (Experimental/Control) | 55.807 | 1 | 55.807 | 6.302 | 0.015 | 0.091 |
| Error | 557.886 | 63 | 8.855 | | | |
| Within participants | 705.708 | 65 | | | | |
| Measurement (Pretest-Posttest) | 66.816 | 1 | 66.816 | 6.618 | 0.012 | 0.095 |
| Group*Measurement | 2.816 | 1 | 2.816 | 0.279 | 0.599 | 0.004 |
| Error | 636.076 | 63 | 10.096 | | | |
| Total | 1319.401 | 129 | | | | |

($p>0.05$)

There was no significant difference between the pre- and post-research scores as regards the Naturalistic Intelligence domain of children with and without drama education and that the common effect of whether drama education was received or not and repeated measurement factors on the Naturalistic Intelligence domain scores was not significant [$F(1,63)=0.279$ $p>0.05$]. This finding suggested that whether or not drama education was received had no effect in increasing the Naturalistic Intelligence scores. It was found upon a review of group main effect regardless of the change in groups between the pretest and posttest that there was a medium scale significant difference between the mean total Interpersonal-Social Intelligence domain scores of experimental and control group children as obtained by repeated measurements [$F(1,63)=6.302$, $p<0.05$]. This finding suggested that there was a significant difference between the mean scale scores of the children enrolled in the experimental and control groups regardless of change from the pretest to the posttest. Nevertheless although the result of the group main effect test was significant, the same did not provide a definite conclusion as regards the effect of drama education on Naturalistic Intelligence domain. It was found upon a review of repeated measurements main effect regardless of the children's groups that there was a significant difference between the pre- and post-research mean Naturalistic Intelligence domain scores [$F(1,63)=6.618$, $p<0.05$ and $\eta^2=0.095$]. In other words, although the findings suggested that the changes as observed in children from the pretest to the posttest were significant, the same did not provide clear information as regards the source of variation. The fact that group and repeated measurement main effects were significant, where the common effect was not, indicated that there was no significant change in children's behavior upon experimental process.

Üstündağ and Özdemir (2007) investigated the effect of drama method in teaching the biographies of scientists and their contributions. As a result of the study it was found that the youngsters more easily learned the biographies of scientists and their contributions since they were involved in the process by doing and internalizing. Yılmaz (2007) found that drama method as used in Science course had an effect on children's attitude towards science. Erkoca Akköse (2008) concluded that drama was an effective method in helping with children to find the cause and effect relationships in natural events. The aforementioned studies underscored that drama education had positive effects on science topics that might be associated with the naturalistic intelligence domain. However each study above focused on a specific subject. However the objective was to support the naturalistic intelligence domain together with the other domains of intelligence in the present study, which aimed to investigate the effect of drama education on multiple intelligence domains of children attending to the fifth grade. Thus, it was seen that in a drama education program limited to 30 practices, there was no significant change neither in naturalistic intelligence domain, nor in other domains of intelligence.

Conclusion and Recommendations

As a result of the study no significant difference was found between pretest and posttest scores of children in the experimental and control groups regarding verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal-social, intrapersonal-internal, and naturalistic intelligence subdomains of the "Self-Assessment Scale in Multiple Intelligence Domains" ($p>0.05$). It was found that there was a significant difference between pretest and posttest scores of children regardless of their groups in visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal-social, and naturalistic intelligence subdomains of the "Self-Assessment Scale in Multiple Intelligence Domains" ($p<0.05$).

As a result of the study, the present study, which aimed to investigate the effect of drama education on multiple intelligence domains of children attending to the fifth grade, certain recommendations can be made to educators and researchers. It was aimed to investigate the effect of drama education on all the domains of intelligence of children; yet it was found that drama education had no effect on multiple intelligence domains. Future research may be in the form of experimental studies, which aim to investigate the effect of drama education on a single domain of intelligence. The present study involved 30 drama activities twice a week. An increased number of drama activities as applied more than twice a week can be experimented. A scale can be developed in order to determine

the multiple intelligence domains of children at different age groups, educators, and parents. Further research can be designed so as to investigate the relationship between the multiple intelligence domains of educators and parents, and the children. Further research can be prepared to investigate the multiple intelligence domains of children at different educational levels. Multiple intelligence domains of children attending to school with different educational approaches may be investigated in comparison. This study aimed to investigate the effect of drama education on multiple intelligence domains of children. Further studies may involve experimental processes, which accommodate different methods and techniques towards developing the multiple intelligence domains of children.

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