Evaluation on

"Quality Thematic Network (QTN) on Drama in Education"
The Third Report (2010-2011)

Submitted by

Anna Hui, Ph.D.
Assistant Professor

Kelvin Lee
Stanley Choi
Research Assistants

Department of Applied Social Studies
City University of Hong Kong

To

Ming Ri Institute of Arts Education

August 31, 2011

This third year report evaluated the effect of drama education on students and teachers from kindergartens, primary schools and a special school who had taken part in the project entitled "Quality Thematic Network (QTN) on Drama in Education" (QEF) from Sept. 2010 to July 2011. Special thanks are due to the participating schools and the student research assistants taking part in the study. All correspondence of the report should be addressed to Dr. Anna Hui, Dept. of Applied Social Studies, City University of Hong Kong, Tat Chee Avenue, Kowloon or annahui@cityu.edu.hk.

Abstract

In Hong Kong's recent curriculum reform, creativity has been identified as a generic skill to be nurtured in our students of all levels in the key learning areas, including arts education. The present study evaluated the effects of a drama in education project on both students and teachers. Teachers from kindergarten, primary and special schools took part in a 12-hour teacher training program on drama in education. Teachers also received support in lesson planning on drama enhanced learning to the classes they were teaching. The study included 26 kindergartens, 22 primary schools, and 1 special school that participated voluntarily in the drama project. There were 824 teacher participants. About 4,597 student participants in total were randomly drawn to participate, 3,472 of them were primary school students (2,235 were in the experimental group and 1,237 were in the control group), 1,055 of them were kindergarten students. Significant differences were found in the teacher-perceived dramatic and creativity characteristics in the experimental group of kindergarten students. Primary students in the drama training also reported significant gains in dramatic, creativity and communicative characteristics. Special learners also displayed more dramatic and creativity characteristics, as well as positive emotions and perspective taking. Significant positive effects were also found in the creative fostering teaching technique of all groups of teachers involved in the training. They encouraged their students to become cooperative learners and provided students with try out opportunities. They also indicated that drama strategies were effective in classroom instruction and enhanced teacher self efficacy. Limitations and future directions were discussed.

中文摘要

創造力是近年教育改革下所提倡的一項共通能力，建議在各個的學習領域中，包括：藝術教育，培訓各級學生的創造力。本研究評估了戲劇教育培訓，對學生及教師的成效。幼稚園、小學及特殊學校教師透過十二小時的戲劇教育教師培訓，然而和戲劇教育導師一起策劃以戲劇輔助教學的課程設計，並且進行試教。是次研究總共包括來自 26 所幼稚園，22 所小學及 1 所特殊學校的 824 位老師及 4,597 位學生，有 3,472 為小學生 (2,235 屬實驗組、1,237 屬控制組) ，而幼稚園學生有 1,055 位。結果顯示實驗組的學生，經過戲劇教學後，幼稚園老師觀察他們的戲劇及創意特質較控制組的學生明顯地高。參與戲劇培訓的小學生則在戲劇、創意及溝通特質方面，較控制組學生有更好表現。實驗組的特殊學生比控制組的學生，在創意特質方面更有進步。至於教師方面，戲劇教育培訓能有效提升幼稚園、小學及特殊學校教師的創意教學風格。教師更懂得鼓勵學生獨立和合作地學習，他們願意延後作判斷和提供嘗試的機會。這些教師亦表示戲劇教育的訓練能提升他們的課室管理和有助作專業發展。研究的限制和未來方向亦會討論。

1. Introduction

The development of creativity in school children has become one of the major foci in educational reforms in different Asia-Pacific societies, including Australia, China, Hong Kong, Singapore, and Taiwan (Hui & Lau, 2010). In Australia, creativity is promoted in teaching and learning at schools; in China, it has been encouraged in science and technology in higher education; and in Hong Kong, creativity has been identified as one of the nine generic skills to be nurtured and defined as a behaviour that is "the result of a complex of cognitive skills/abilities, personality factors, motivation, strategies, and metacognitive skills" (Curriculum Development Council, HKSAR, 2002, p. 45). Creativity is viewed as a desired learning outcome in Singaporean primary and secondary schools, and is associated with "enterprising" in the economy. An official white paper on creative education published in 2003, "Establishing a republic of creativity for Taiwan," adopts a multilevel approach to fostering creativity at the individual, school, societal, industrial, and cultural levels.

In Hong Kong, arts education "contributes significantly to students' aesthetic development (Curriculum Development Council, HKSAR, 2002)" and is one of the five essential areas, ethics, intellect, physique, social skills and aesthetics, in the overall aim of education set out by the Education Commission (Education Bureau, HKSAR, 2007). More specifically, the learning targets of arts education are to help students, first, developing their creativity and imagination. Second, helps developing skills to explore. Third, helps

cultivating critical responses to arts issues. Forth, helps understanding arts in cultural contexts. These 4 learning targets are believed to be inextricably intertwined and should be developed simultaneously. Teachers are suggested to base these four learning targets on students' backgrounds, interests and needs in order to have effective learning, teaching and assessment. Students are believed to have the skills, knowledge and positive attitudes towards the arts developed under this art curriculum (Curriculum Development Council, HKSAR, 2002).

More than a hundred of experimental studies tried to prove the existence of a relationship between drama education and academic variables over the past three decades. All of the studies held a common theme, believing that dram education can improve students' ability in other academic areas, such as achievement, oral, reading, as well as writing skills (Podlozny, 2000). This study aimed at trying to investigate in the effect of learning through drama on students' creativity and communication skills. Teachers' feedback on the implementation of drama in education as creative practices and creativity fostering teaching style were also addressed in the study.

1.1 Learning through Drama

Arts Education is a broad subject includes visual arts, dance, music, and drama, etc. In an extensive evaluation of school-based arts education programs in Australian schools conducted by Bryce et al., (2004), problem solving, planning, communication and working in teams were found to be significant learning outcomes and key competencies in participants of

art rich group and non-art rich group, music group and non-music group. Creativity, motivation in learning and student engagement were also greatly enhanced in the qualitative reports from students and teachers in the arts education programs.

Drama can stand on its' own as a subject, but more often, it falls into one or several modules in the school curriculum of integrated arts. Drama can also be used to assist the learning of various academic subjects such as languages and mathematics. By incorporating drama strategies into the teaching and learning of these subjects, creativity was found to have enhanced and learning motivation was found to have increased. An example is the use of gesture to express abstract words in learning a second language. This kind of practice is called "learning through drama". This was the teaching strategy that was examined in this study.

1.2 Effect of drama education on students

As mentioned above, many studies aimed to examine the benefits of drama education although some have not reported great impact. In the meta-analysis conducted by Podlozny (2000), drama education was effective in raising students' reading achievement as well as oral language. Although the results were not statistically significant, vocabulary was found to have improved. In another study conducted by Duatepe-Paksu and Ubuz (2009), it was found that instruction that was delivered in the form of drama increased achievement and attitudes of students in geometry learning. This improvement was found to be unaffected neither by

gender nor by students' attitudes in the past. However, Winner and Cooper (2000) did not have a conclusive finding that arts study had a causal link to academic achievement, such as verbal and mathematical scores.

Some other demographic variables, such as the age and types of students, were also important concerns in the studies of drama education. Kardash and Wright (1986) found that younger but not older children, typical instead of special students, benefited more as indicated by the stronger relationship between drama education and the varied outcomes measured in the studies. Also, it was found that as the time of drama instruction increased, the strength of the relationship also increased. This result was supported by another study conducted by Conard (1992).

The most encouraging finding of these studies was the transfer of benefit of drama education to other academic domains. Students were not only trained to be better in handling texts or stories they had encountered or enacted before, they also out-perform their non-drama peers on new materials that they have never encountered before (Podlozny, 2000). As early as 1986, Kardash and Wright also noticed the transfer effect. They reported in their meta-analysis study that drama education was not only positively related to reading and oral ability, but also to moral reasoning and self-esteem. This adds value to the study of drama education, due to many of its latent benefits. It is believed that besides the known direct benefits on academic domains and indirect benefits, such as creativity and communication

skills, more benefits of drama education could be found through carefully-designed studies.

1.3 Other benefits of drama education

The training that students receive in the process of learning through drama is not only beneficial for their learning, it is also found to be beneficial in the development of characteristics in human kind. Drama training often encourages students in trying to understand the inner thoughts of characters. This may help students to develop thinking in another perspective (Goldstein, 2009). In the acting process, empathy was also found to have enhanced. Empathy here is defined as the ability to feel another's feelings (Bryant, 1982). Nettle (2006) found supportive evidence. It was also found that professional actors scored higher in the Empathy Quotient (Baron-Cohen & Wheelwright, 2004), which was used to measure affective empathy, than the control group. And in drama training, actors were trained to control their emotions. This ability was coined as emotion regulation in the field of psychology (Gross, 2002). In sum, drama training is believed to enhance learners' perspective taking, empathy and emotion regulation ability, which are exactly traits that our spoiled younger generation lacks. Nevertheless, insignificant findings were found in other studies, such as Freeman, Sullivan and Fulton (2003). They could not have significant improvements in self-concept, problem behavior and social skills of Grade 3 and 4 students after taking part in a 18-week creative drama activity.

Moga, Burger, Hetland and Winner (2000) conducted a meta-analysis on whether

studying the arts engendered creative thinking. In the 10 correlational studies with a total sample size of 1513, a large effect size (r = .27) was found but the range was wide, from r = .09 to r = .43. A clear association was shown between studying the arts and performance on creativity measures. However, a smaller effect size (r = .05) was recorded in experimental studies with verbal creativity outcomes and a modest effect size (r = .19) with figural creativity outcomes. They concluded that positive association was found between arts education and creativity and more experimental studies were required to prove its causal relationship.

The learning experience in drama in the arts has encouraged "rehearsal of cognitive processes that we might call creative" (Howard-Jones, Winfield, & Crimmins, 2008, p. 189) when learners and educators co-construct the scenes collaboratively. Sullivan and McCarthy (2009) summarized that the experiential process of art has provided a promising opportunity for individuals to "restructuring and expanding aesthetic perception" in everyday life (p. 186). The restructuring and expanding cognitive processes are essentially creative processes. In Boerner, Jobst, and Wiemann's (2010) empirical study of theatrical experience in 125 German adult audience, it was found that the cognitive and emotional dimensions of the theatrical experience were significant predictors of the overall positive judgment of aesthetics and instrumental value. The emphasis of experiential learning in the arts has provided

children and adults with opportunities to make use of creative thinking skills to express and communicate their ideas in a flexible and unique way in various arts forms.

1.4 Drama activities for special learners

Like students from mainstream schools, it is important for special learners to enhance their sense of selves through expressing oneself (Roy, 2007). Through drama activities, students with special needs can gain self-esteem and improve communication skills (Jindal-Snape & Vettraino, 2007). Students can learn how to participate in imaginative-play and learn social skills through such activities. Drama can be used in empowering students and helping them develop self-advocacy, differing from traditional teaching methods. Special learners can learn about the social world and acquire appropriate emotional responses for social interactions through drama education.

1.5 Teachers' role in drama education

Whilst the benefits of learning through drama for students were examined a lot, little has been done with the possible benefit that teacher would gain, or the difficulties they encountered during the implementation of this creative form of teaching. According to the curriculum guide of Arts Education of Hong Kong (Curriculum Development Council, 2002), teachers were responsible for students' development of creativity, critical thinking and communication skills through the teaching of art subjects. It is teachers' responsibility to make drama an interesting subject (Kitson & Spiby, 1997).While giving lesson on drama,

teacher also bears a role as a performer. It is not an easy job, as Biggs (1999) had stated, the most demanding scene for an actor is those when it requires them to act alone. It adds challenges to the job when students' creativity response has to be encouraged, but on the other hand the order of the classroom could not be sacrificed.

The place of teacher in the development of students' creativity should not be questioned (Gardner, 1993). In the study conducted by Kampylis, Berki & Saariluoma (2009), majority of both in-service and prospective teachers agreed that teachers play a role in enhancing students' creativity. However, they also felt that they were not well-prepared and confident enough in achieving this. This was coherent with the finding of Torrance and Safter (1986) in which the author stated that the teachers were "ill-equipped" in facilitating students' creativity expression. On the other study, teachers were found to value creativity on one hand, but not preferred the personality traits that often come along with creativity, which includes impulsiveness, risk taking behavior and independence of students, as revealed in teachers' self-report (Westby and Dawson , 1995). Study conducted by Fryer and Collings (1991) which involved about one thousand teachers and lecturers from England and Wales also found that the participants had diverse perception of creativity. These all maybe attributed to the little education about creativity that teachers received while they were still students (Mack, 1987). More recently, Davies, Howe, Fasciato, and Rogers (2004) expressed the same view that teachers have a confined and stereotypic view of creativity and agreed that the

attention given to creativity in teachers' education was not enough.

The discrepancy between teachers' concept and actual behavior may lead to "*inhibiting practices"* (Alencar, 2002) which may be exhibited as stressing on the correct response, overly emphasizing on the reproduction of knowledge, underestimating students' creative potential, stressing the importance of obedience and passivity, devaluing fantasy and imagination. But it is believed that as teachers gain experience in drama teaching, these inhibiting practices will be eliminated.

The difficulties encountered definitely could not be solved alone by teachers. It requires the cooperation of many parties including school administrative, educators, government, and psychologists etc. But once the difficulties were being noticed, it is one more step closer to its solution. And the benefit for teachers should not be neglected. By incorporating dram into their teaching, it is believed that teacher-student relationship could be enhanced, due to the increased amount of communication between them. And drama is a good way to bring daily experience into classroom for teacher to give lively lesson. After all, teachers may take this chance to go through self-reflection with students and increase their own self-understanding.

Drama enhanced curriculum is an effective strategy to foster creativity in students. Morgan and Saxton (2001) explained that the approach of learning and teaching through drama would enhance students' reflective and adaptive skills and enable them to look into the problem from multiple dimensions. Drama education adopts an innovative approach to

learning from a child-centered perspective (Bolton, 2001). Speech and drama specialists work together through the curriculum to improve communication and problem solving skills through creating drama.

2. Methodology

2.1 Participants

The study included 26 kindergartens, 22 primary schools, and 1 special school that participated voluntarily in the drama project. The teachers received a drama training program for 24 hours and another 10 hours on-site coach supervision by a drama educator in designing a lesson enhanced with drama for their students. Teachers who joined the drama training and implemented drama education in classes were considered to be the experimental group; those who joined the training without implementation and those who did not join the training at all were considered to be the control group. Students who were taught by experimental teachers belonged to the experimental group; while students did not teach by experimental teachers were in the control group.

At the beginning of the study, there were 824 teacher participants in total, 227 of them were kindergarten teachers (99 were in the experimental group, 128 were in the control group), 582 of them were primary school teachers (131 were in the experimental group, 440 were in the control group, and 1 did not indicate his/her group), and 14 of them were special school teachers (7 were in the experimental group, 7 were in the control group). About 4,597

student participants in total were randomly drawn to participate in the study, 3,472 of them were primary school students (2,235 were in the experimental group and 1,237 were in the control group), 1,055 of them were kindergarten students (455 were in the experimental group, 287 were in the control group, and 313 did not indicate their group), and 52 of them were special school students (32 were in the experimental group and 20 were in the control group). Within the 4,597 primary school participants, 658 students were, further, randomly selected by schools to participate in the story-telling test (STT). All the 1,055 kindergarten and 52 special school participants were invited to join the STT.

This third year report included participants, who had participated in both the pre-test (from October to December, 2010) and post-test (from April to August, 2011). A total of 512 teacher participants, with 151 kindergarten teachers (73 from the experimental group and 78 control group), 350 primary school teachers (86 from the experimental group, 257 from the control group, and 7 did not indicate their group), and 11 special school teacher (5 from the experimental group and 6 control group); 2,838 primary school participants (1870 from the experimental group and 968 from the control group), 751 kindergarten participants (465 from the experimental group and 286 from the control group), and 51 special school participants (31 from the experimental group and 20 from the control group) completed both the pre-test and post-test questionnaires. Among the STT participants, 608 primary participants (418 from experimental group and 190 from control group), 560 kindergarten participants (370 from

experimental group and 190 from control group), and 34 special school participants (17 from experimental group and 17 from control group) completed the STT in both the pre-test and post-test. Those who had completed pre-test only but not post-test would not be included the current study.

2.2 Instruments

2.2.1 Instruments for Students - SRBCSS, Motivation for Drama Education, IRI, Positive Emotion Responses, STT

Items adopted from Renzulli, Smith, White, Callahan and Hartmann (1976) Scales for Rating the Behavioral Characteristics of Superior Students (SRBCSS), were used to access students' 1) Dramatics Characteristics, 2) Creativity Characteristics, and 3) Communication Characteristics. There were 10 items in each Dramatics and Creativity Characteristics subscale, and 15 items in the Communication Characteristics subscale. Items were rated using a 6-point Likert-scale (from 1 = never to 6 = always). The questionnaire was administrated twice to compare the pre- and post-test scores.

For kindergarten students, teachers were responsible for filling in the form for the students based on the classroom observation of child's behavior. Only the first two parts, Dramatics Characteristics and Creativity Characteristics were assessed in kindergarten students by their teachers.

For primary school students, 2 additional measurements, namely Communication

Characteristics (15 items), another subscale from the SRBCSS, and the scale of Motivation for Drama Education (15 items), compiled by the first author based on the SRBCSS Motivation Characteristics subscale, were included; and a multidimensional approach empathy test- Interpersonal Reactivity Index (IRI), which was developed by Davis (1980, 1983 & 1994), for measuring students' empathy was also included in the questionnaire for the primary school students. The IRI consisted of four subscales, Fantasy, Empathetic Concern, Perspective Taking, and Personal Distress, only the subscales Empathetic Concern (7 items) and Perspective Taking (7 items) were included for the primary school students in the current study.

For special school students, a 11-item scale, developed by the first author based on the SRBCSS subscales Dramatics Characteristics and Creativity Characteristics, measuring students' Dramatics and Creativity Characteristics together; a scale measuring students' positive emotion responses; and the IRI, the same in the primary school students questionnaire, were included in the questionnaire for them. Questionnaires for the special school students were rated by their corresponding teachers during the pre-test and post-test.

The primary students filled in the questionnaire by themselves. Dramatics Characteristics was measured by items such as "Volunteers to participate in classroom plays or skits"; Creativity was measured by items such as "Demonstrates imaginative thinking ability"; Communication skills was measured by items such as "Speaks and writes directly

and to the point"; and Motivation for Drama Education was measured by items such as "Talk to my parents about what I have in drama enhanced class".

The reliability of the subscales as indicated by the Cronbach's alphas were .90, .86 in the pre-test and .94 and .96 in the post-test of Dramatics Characteristics and Creativity Characteristics respectively for kindergarten students; for primary students, the Cronbach's Alphas were .90, .86, .95, .95, .59, and .64 in the pre-test and .91, .88, .96, .95, .57, and .66 in the post test for Dramatics Characteristics, Creativity Characteristics, Communication Characteristics, Motivation for Drama Education, and IRI subscales "Empathetic Concern" and "Perspective Taking" respectively. As for special school students, the Cronbach's Alphas were .96, .83, .60, and .79 in pre-test and .96, .58, .73, and .71 in the post-test of Dramatics & Creativity Characteristics, Positive Emotional Responses, and IRI subscales "Empathetic Concern" and "Perspective Taking" respectively.

The Story Telling Test (STT; Hui & Lau, 2006; Hui, Wong, Cheung & He, 2011) was conducted by a trained research assistant who disguised herself or himself as a volunteer from an organization called "The Story Kingdom". Each student was presented with an unseen picture and was asked to tell a story about the picture. No time limit was set and the student was asked if he or she wanted to add a title to the story in the end. Two different pictures were used separately for the pre-test and post-test. Specifically, the whole story-telling scene was first video-taped and the performance was then evaluated by two raters independently in

accordance to 11 criteria, of which the first 10 criteria are the same for kindergarten, special school and primary school students: relevancy to the story (Theme), ability to describe the story (Description of Options), ability to organize the story (Story Structure), ability to express (Clarity of Speech), ability to show emotions and speak in an audible tone (Audibility), ability to express proper emotions (Emotion), ability to add in conversations (Use of Dialogue), ability to include humorous elements (Humor), ability to include creative elements (Creativity), and ability to identify problems and find relevant solutions (Problem Identification and Solution). For the last criterion, kindergarten students were assessed on whether they were able to give a relevant name to their story (Story Entitlement), and primary school students were assessed on whether appropriate vocabularies were used (Use of Vocabulary).

Each criterion was rated on a four-point scale (from 1, lowest, to 4, highest). Each pre-test story was rated by two trained researchers. A mean taken from rater 1's rating and rater 2's rating for each criterion was used for the analyses. The inter-rater reliability, as indicated by Cronbach's Alphas, of the total STT score for the kindergarten students and primary school students were .80, and .73 respectively in the pre-test. Only a portion of kindergarten and primary school post-test stories were rated by two raters due to the belated data collection date for some of the schools. 163 stories out of 560 were rated by 2 raters and yielded a good Cronbach's Alpha (.84) for the total STT score; and 205 stories out of 751

were rated by 2 rater and also yielded a good Cronbach's Alpha (.75) for the total STT score. With the good inter-rater reliability, as indicated by the good Cronbach's Alphas, it was confident to use the ratings by 1 rater only for the remaining stories. All stories from the special school students were rated by 2 raters and the Cronbach's Alphas were .86 and .85 in the pre-test and post-test respectively.

2.2.2 Instruments for Teachers - CFTIndex, Students' Motivation for Drama Education, TSES

In measuring the effect of drama education training on teachers, items adopted from Soh's (2000) Creativity Foresting Teacher Index (CFTIndex) were used to measure teacher's self-rated level on fostering student's different learning characteristics. There were originally 45 items and every five items form a subscale. The 9 subscales were: 1) Independent Learning (e.g., "I teach students the basics and leave room for individual learning."); 2) Cooperative Learning (e.g., "In my class, students have opportunities to share ideas and views."); 3) Motivation in mastery of knowledge (e.g., "Learning the basic knowledge/skills well is emphasized in my class."); 4) Suspended Judgment (e.g., "I comments on students' ideas only after they have been more thoroughly explored."; 5) Flexibility in Thinking (e.g., "I encourage my students to think in different directions even if some of the ideas may not work."); 6) Self-Evaluation (e.g., "My students know that I expect them to check their own work before I do."); 7) Building on Student's Idea (e.g., "I listen to my students' suggestions even if they are not practical or useful."); 8) Opportunities for Trial

(e.g., “My students are encouraged to do different things with what they have learned in class.”); and 9) Positive Coping with Frustration (e.g., “I encourage students who experienced failure to find other possible solutions.”). Items were rated in a 6-point Likert-scale (from 1 = never to 6 = always) and questions were administrated twice to give pre- and post-test scores.

The in-depth interviews with the teachers in the second year evaluation revealed that classroom management skills were improved after receiving training in drama education. The 12-item short form of the Teachers’ Self-Efficacy Scale (TSES; Tschannen-Moran and WoolfolkHoy, 2001), therefore, was included in this third year evaluation. The TSES contains three 4-item subscales: self-efficacy for classroom management (e.g., “How much can you do to control disruptive behavior in the classroom?”), instructional strategies (e.g., “How much can you do to craft good questions for students?”), and student engagement (e.g., “How much can you do to motivate students who show low interest in school work?”); they were rated in a 9-point scale (from 1 = never to 9 = always).

In addition, a scale measuring students’ observed Motivation for Drama Education, the same as the one in the primary schoolchildren questionnaire despite the subjects used in the items, was also included in this third year teacher questionnaire to measure students’ observed outcome from drama education. A sample of the items was, “Students talk to their parents about what they have in drama enhanced classes.”

In order to avoid a lengthy questionnaire for the teachers, the 45-item CFTIndex was

revised into a 27-item scale based on the pre-test data from the second year research. For each 5-item subscale, three items which caused the top 3 highest drop in the Cronbach's Alpha when deleted were retained. The revised 27-item CFTIndex together with the 12-item self-efficacy scale and the 15-item students' motivation scale formed the 54-item questionnaire for the teachers in the third year evaluation.

The pre-test reliability of the CFTIndex subscales "Independent Learning", "Cooperative Learning", "Motivation", "Suspended Judgment", "Flexibility in Thinking", "Self-Evaluation", "Building on Students' Ideas", "Opportunities for Trial", and "Positive Coping with Frustration" as indicated by Cronbach's Alphas were .77, .78, .79, .67, .72, .66, .77, .64 and .79 respectively for the pre-test and .82, .82, .85, .78, .75, .71, .81, .78 and .85 respectively for the post-test in primary and special school teachers; .76, .81, .83, .77, .79, .67, .85, .77, and .82 respectively for the pre-test and .82, .86, .83, .76, .81, .69, .85, .79, and.87 respectively for the post-test in kindergarten garden teachers.

Cronbach's Alphas of Observed Students' Motivation for Art Education and Teachers' Self-Efficacy were .98 and .94 respectively for the pre-test and .97 and .95 respectively for the post-test in primary and special school teachers; .98 and .92 respectively for the pre-test and .98 and .96 respectively for the post-test in kindergarten garden teachers.

2.3 Procedure

Teachers in the experimental groups participated in a 12-hour drama training course provided by Ming Ri Institute for Arts Education, and were given training on ways to incorporate drama into their lessons. Other teachers in the schools received 6 hours of basic training on drama in education. Teachers in the experimental group also received a10-hour on-site coach supervision from a drama educator provided by the Institute. They were required to design and deliver 3 teaching units of drama enhanced curriculum in their classrooms but others teachers did not have such requirements. Students taught by teachers in the experimental groups thus were able to have their lessons with dramatic elements while students taught by teachers in the control group might have lessons in the regular way.

The pre-test was conducted within the first two weeks after teachers received training in incorporating drama into their lessons. Teachers and students of both the experimental and control groups in primary schools took part in filling out questionnaires before students were given classes with the dramatic element. Selected students also participated in the story-telling test (STT) (Hui & Lau, 2006; Hui, Wong, Cheung & He, 2011). The post-test was conducted with similar procedures 6 months after the pre-test was conducted.

3. Results

3.1 Effects on Kindergarten Students

3.1.1 Teacher-rated "Dramatics Characteristics" and "Creativity Characteristics"

Significant main effects between the pre-test and post-test were found on all of the 2 teacher-rated behavioral characteristics, “Dramatics characteristics”, F (1, 749) = 410.84, p < .001, partial η^2 = .35, and “Creativity characteristics”, F (1, 749) = 402.50, p < .001, partial η^2 = .35.

Significant main effects for the experimental conditions were found on all of the 2 teacher-rated behavioral characteristics, “Dramatics Characteristic”, F (1, 749) = 16.11, p < .001, partial η^2 = .02, and “Creativity Characteristics”, F (1, 749) = 10.43, p < .01, partial η^2 = .01.

Significant interactions between time and the experimental conditions were found on all of the 2 teacher-rated behavioral characteristics, “Dramatics Characteristic”, F (1, 749) = 43.04, p < .001, partial η^2 = .05, and “Creativity Characteristics”, F (1, 749) = 31.00, p < .001, partial η^2 = .04.

Means and standard deviations for all variables in the kindergarten student questionnaire are listed and potted in Table 1 and Figures 1 to 2.

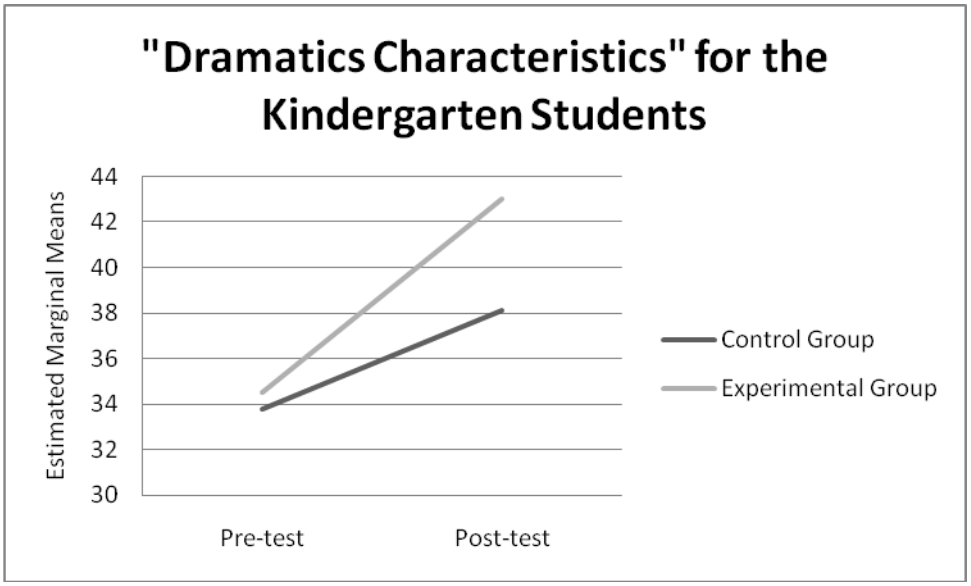

Figure 1.

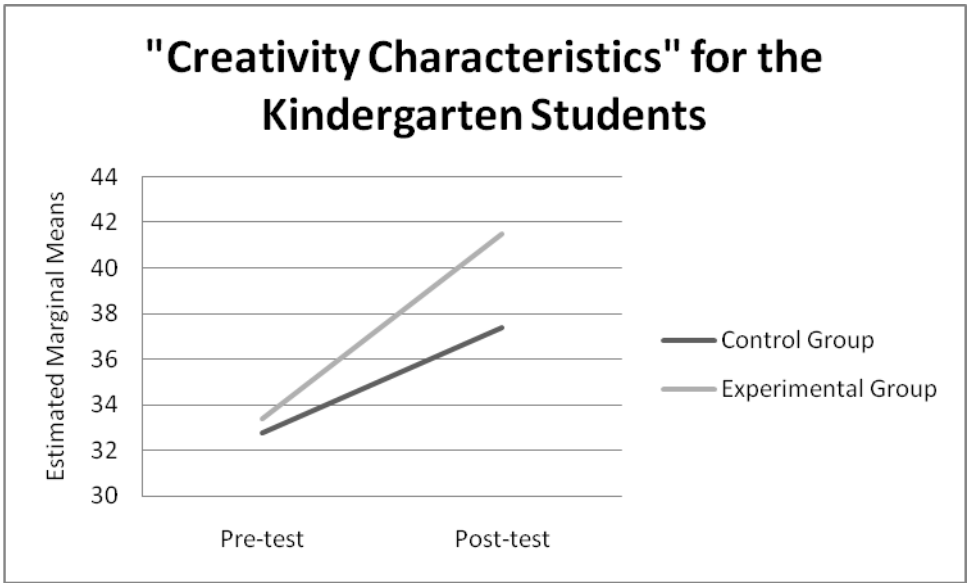

Figure 2.

Table 1

Kindergarten students' means of the Dramatics Characteristics and Creativity Characteristics for each treatment condition. (N = 751)

	Pre-test		Post-Test	
	Control	Experimental	Control	Experimental
	(*n* =286)	(*n* =465)	(*n* =286)	(*n* =465)
Dramatics				

Characteristics^{+}*^	33.81 (10.86)	34.54	(10.57)	38.14 (10.96)	43.02	(8.86)
Creative Characteristics^{+}*^	32.80 (10.70)	33.42	(10.98)	37.36 (11.20)	41.48	(9.81)

Note. $^{+}$main time effect, *main experimental effect, ^interaction effect. Standard deviations are put in parentheses.

3.1.2 Story Telling Task

Significant main effects of time between the pre-test and post-test were found on scores of "Total STT", F (1, 558) = 23.76, $p < .001$, partial $\eta^2 = .04$; "Theme", F (1, 558) = 168.05, $p < .001$, partial $\eta^2 = .23$; "Description", F (1, 558) = 12.00, $p < .01$, partial $\eta^2 = .02$; "Structure", F (1, 558) = 22.42, $p < .001$, partial $\eta^2 = .04$; and "Emotion", F (1, 558) = 19.24, $p < .001$, partial $\eta^2 = .03$; "Creativity", F (1, 558) = 10.96, $p < .01$, partial $\eta^2 = .02$; "Problem Solving", F (1, 558) = 1.80, $p < .01$, partial $\eta^2 = .03$.

A significant main effect for the 2 experimental conditions was found on one of the STT criteria "Creativity", F (1, 558) = 6.54, $p < .05$, partial $\eta^2 = .01$

Significant interactions between time and the experimental conditions were found on the following STT subscales: "Structure", F (1, 558) = 6.51, $p < .05$, partial $\eta^2 = .01$; "Naming", F (1, 558) = 5.94, $p < .05$, partial $\eta^2 = .01$; "Emotion", F (1, 558) = 4.96, $p < .05$, partial $\eta^2 = .01$; and "Dialogue", F (1, 558) = 7.54, $p < .01$, partial $\eta^2 = .01$.

Means and standard deviations for all STT criteria are listed and potted in Table 2 and Figures 3 to 14.

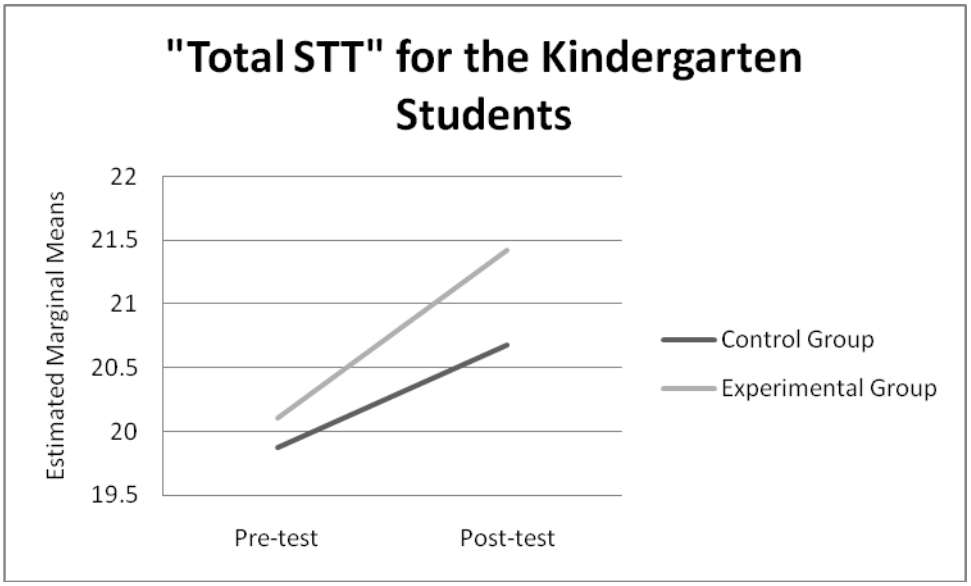

Figure 3.

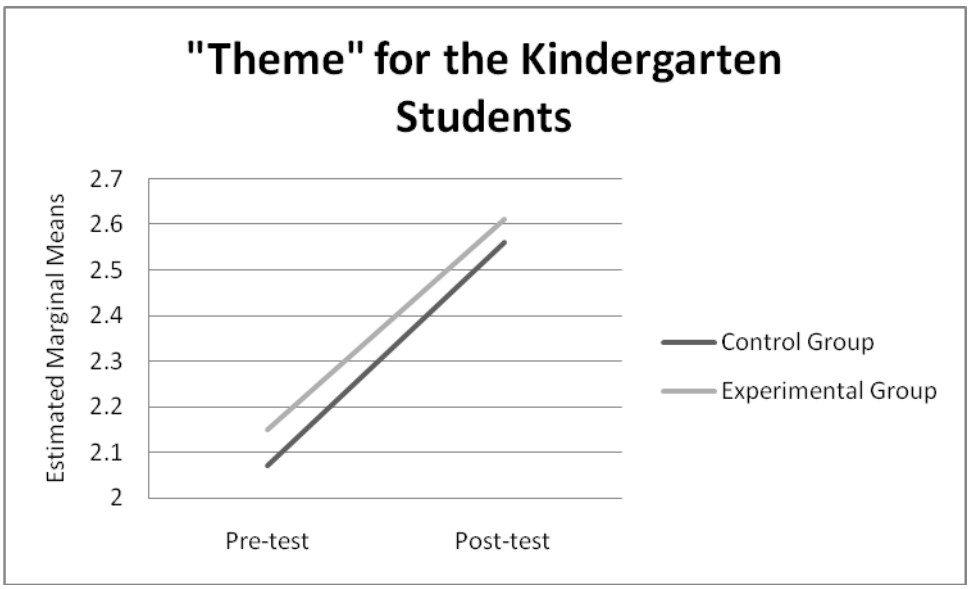

Figure 4.

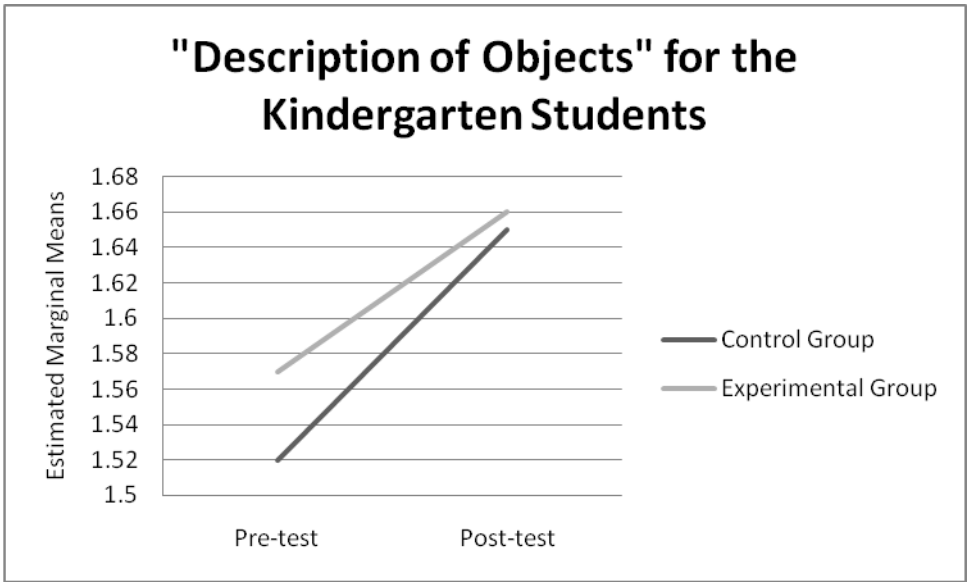

Figure 5.

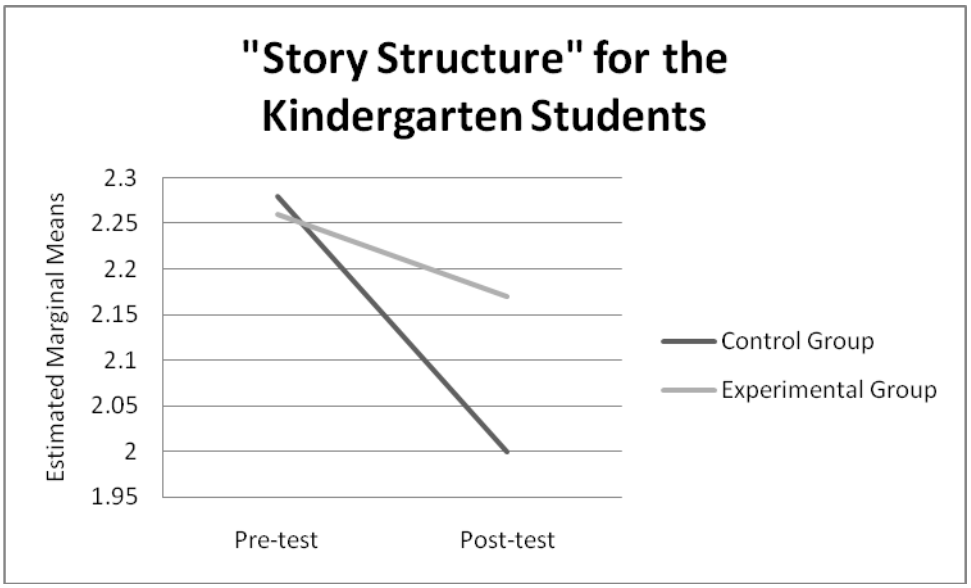

Figure 6.

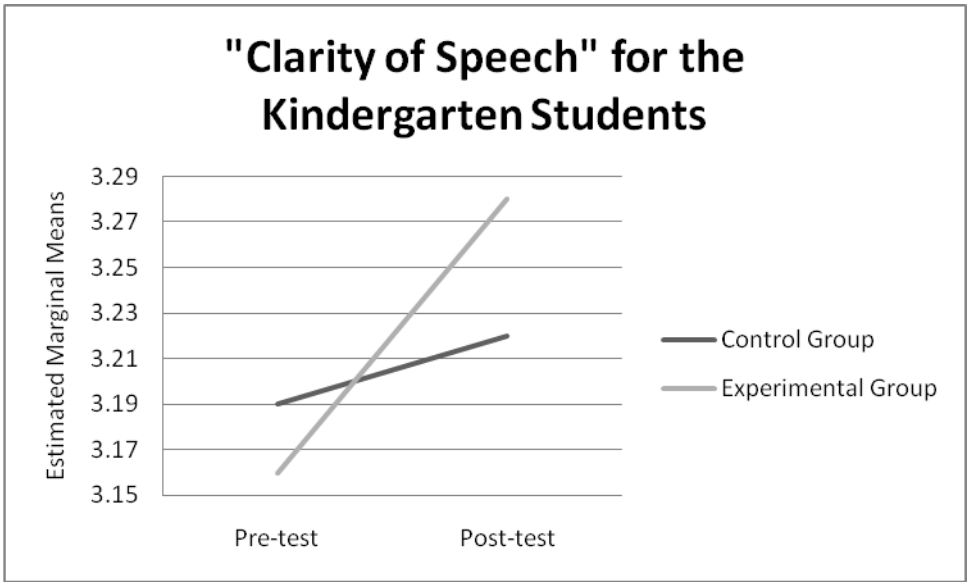

Figure 7.

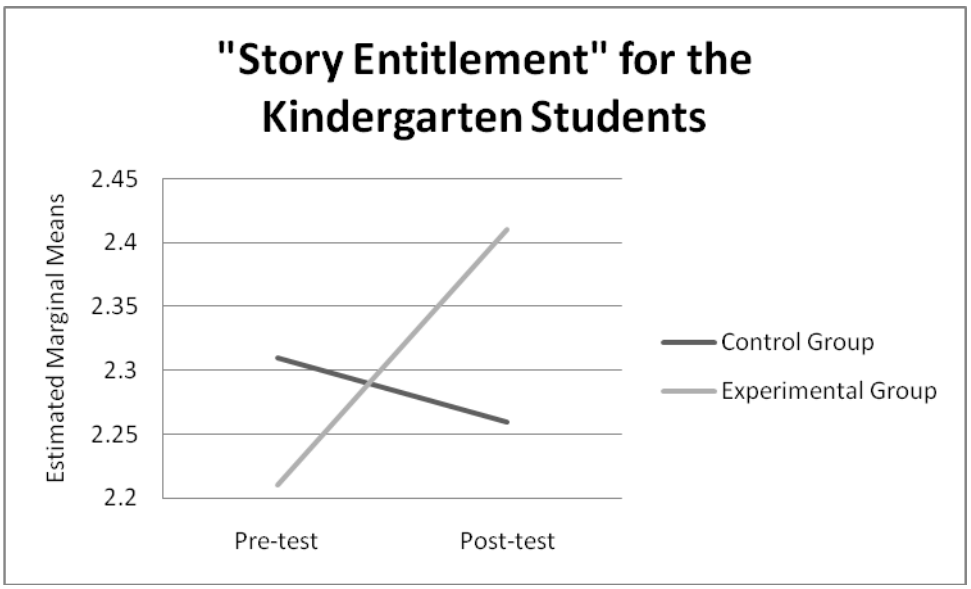

Figure 8.

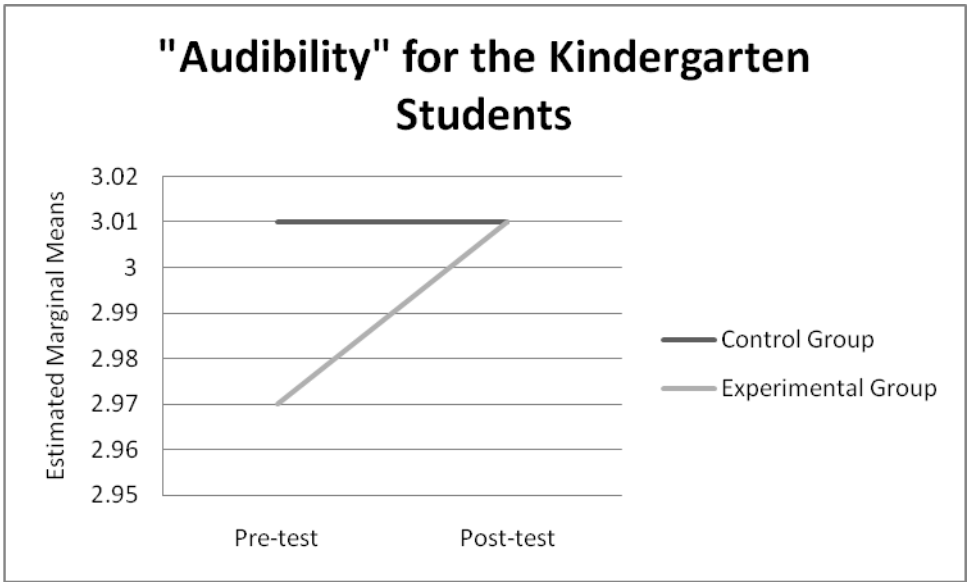

Figure 9.

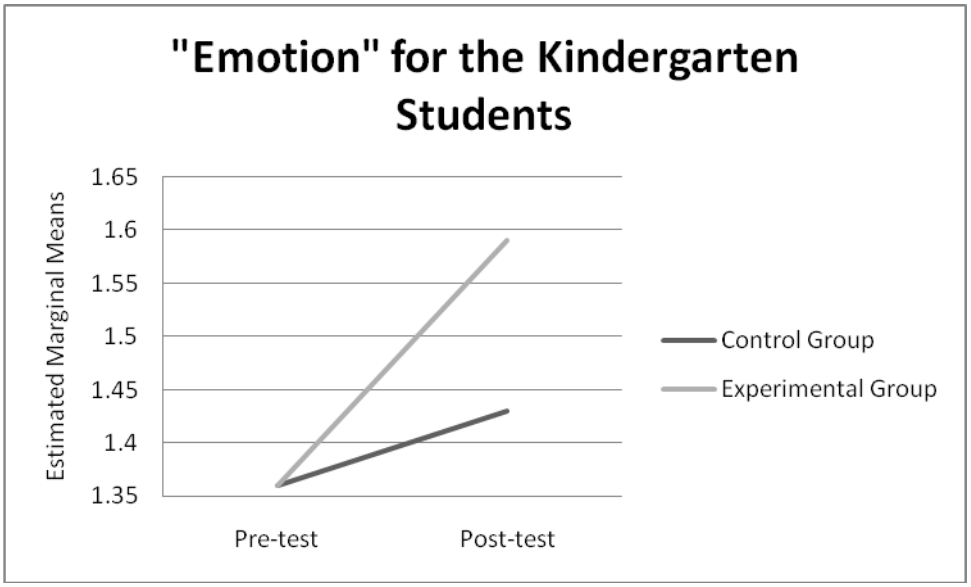

Figure 10.

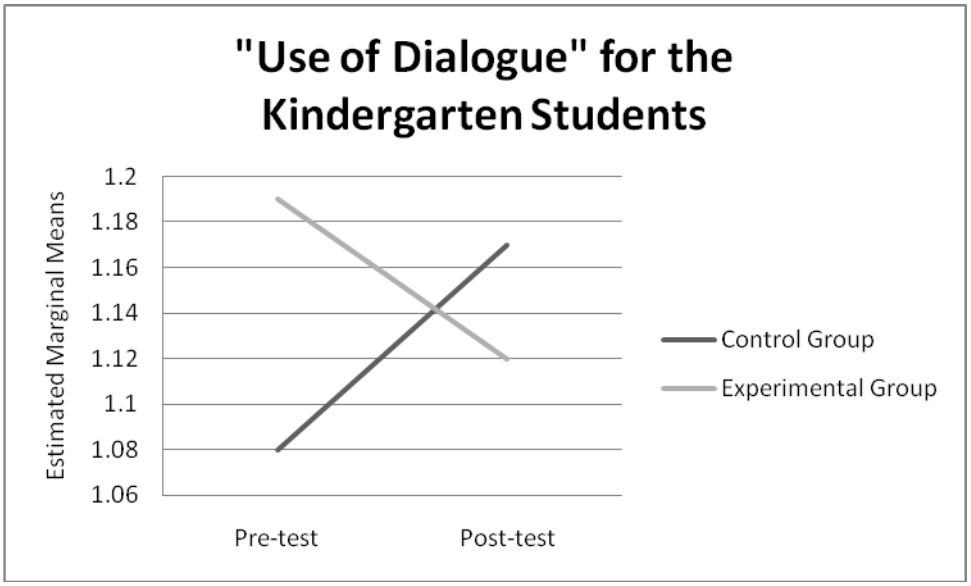

Figure 11.

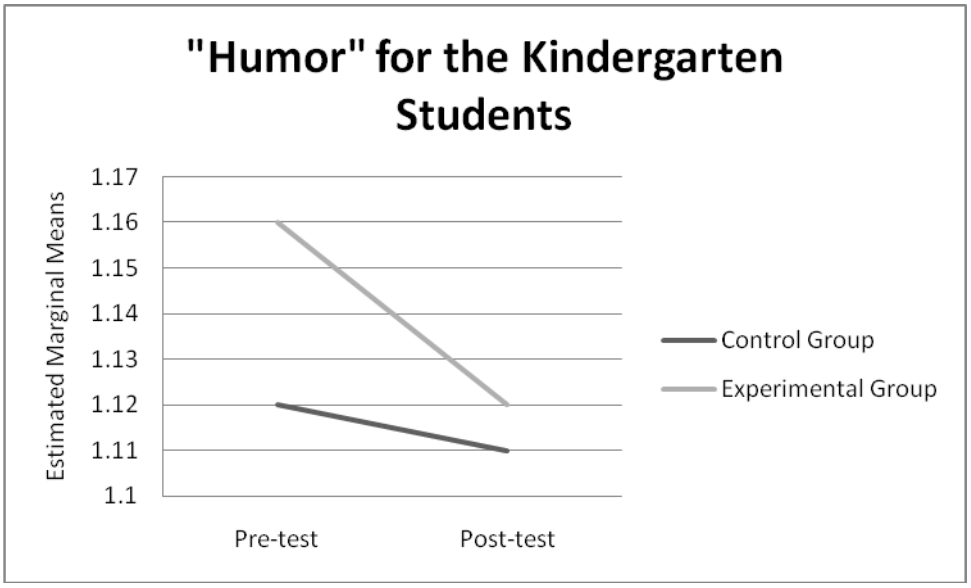

Figure 12.

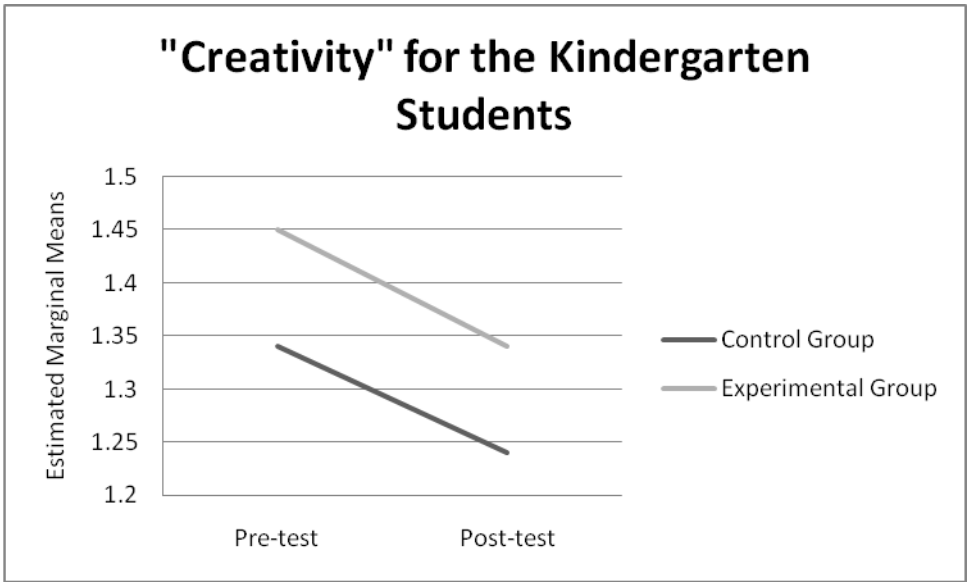

Figure 13.

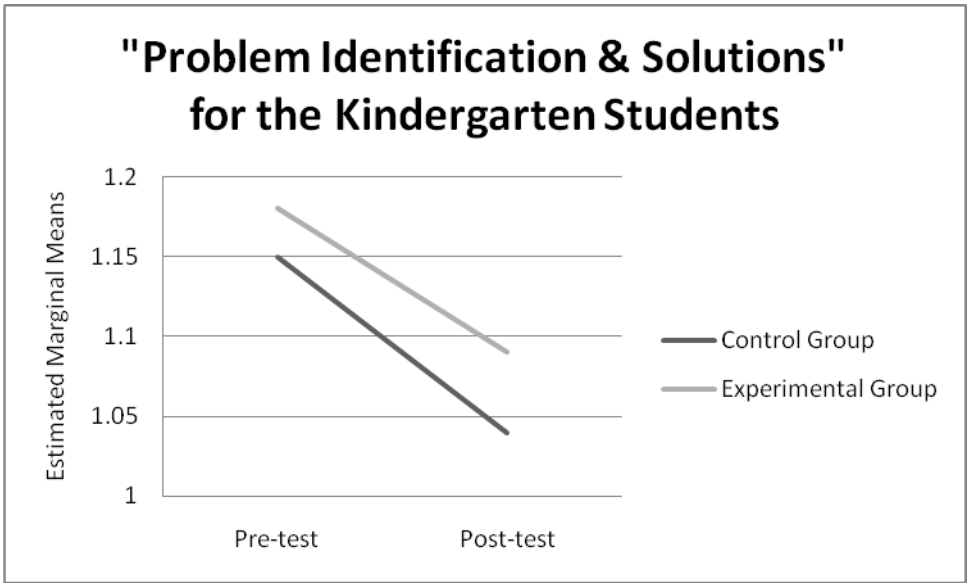

Figure 14.

Table 2

Kindergarten Students' means and standard deviations of the total STT score and scores for individual STT criterion. (N = 560)

	Pre-test		Post-Test	
	Control	Experimental	Control	Experimental
	(*n* =370)	(*n* =190)	(*n* =370)	(*n* =190)

STT Total^{+}	19.88	(4.09)	20.11	(4.69)	20.68	(4.32)	21.42	(4.36)
Theme^{+}	2.07	(.60)	2.15	(.70)	2.56	(.78)	2.61	(.73)
Description^{+}	1.52	(.54)	1.57	(.58)	1.65	(.52)	1.66	(.48)
Structure^{+}^	2.28	(.70)	2.26	(.70)	2.00	(.76)	2.17	(.89)
Clarity^{+}	3.19	(.70)	3.16	(.72)	3.22	(.73)	3.28	(.68)
Naming^{+}^	2.31	(1.01)	2.21	(1.02)	2.26	(.89)	2.41	(.84)
Audibility	3.01	(.76)	2.97	(.77)	3.01	(.99)	3.01	(.97)
Emotion^{+}^	1.36	(.54)	1.36	(.56)	1.43	(.65)	1.59	(.75)
Dialogue^	1.08	(.35)	1.19	(.57)	1.17	(.55)	1.12	(.46)
Humor^{+}	1.12	(.28)	1.16	(.37)	1.11	(.32)	1.12	(.36)
Creativity^{+}*	1.34	(.56)	1.45	(.70)	1.24	(.47)	1.34	(.55)
Problem Solving^{+}	1.15	(.43)	1.18	(.45)	1.04	(.20)	1.09	(.30)

Note. $^{+}$main time effect, *main experimental effect, ^interaction effect. Standard deviations are put in parentheses.

3.2 Effects on Primary School Students

3.2. 1 Self-rated "Dramatics Characteristics", "Creativity Characteristics", "Communication Characteristics", "Motivation for Drama Education", and "Empathy"

Significant main effects for time between the pre-test and post-test were found on, "Dramatics Characteristics", F (1, 2807) = 92.63, $p < .001$, partial $\eta^2 = .03$; "Creativity Characteristics", F (1, 2807) = 73.26, $p < .001$, partial $\eta^2 = .03$; "Communication Characteristics", F (1, 2807) = 403.82, $p < .001$, partial $\eta^2 = .01$; "Motivation for Art Education", F (1, 2807) = 31.75, $p < .001$, partial $\eta^2 = .01$; "Total Empathy", F (1, 2812) = 6.17, $p < .05$, partial $\eta^2 = .0002$; and "Perspective Taking", F (1, 2812) = 9.46, $p < .01$, partial $\eta^2 = .003$.

Significant main effects for the experimental conditions were found on "Dramatics Characteristics", F (1, 2807) = 3.89, $p < .05$, partial $\eta^2 = .001$; "Creativity Characteristics", F (1, 2807) = 7.82, $p < .01$, partial $\eta^2 = .003$; "Motivation for Art Education", F (1, 2807) =

7.59, $p < .01$, partial $\eta^2 = .003$; "Total Empathy", F (1, 2812) = 4.12, $p < .05$, partial $\eta^2 = .001$; and the IRI subscale "Perspective Thinking", F (1, 2807) = 92.63, $p < .001$, partial $\eta^2 = .03$

Significant interactions between time and the experimental conditions were found on "Dramatics & Creativity Characteristics", F (1, 49) = 4.64, $p < .05$, partial $\eta^2 = .09$; "Positive Emotion Responses", F (1, 49) = 11.81, $p < .01$, partial $\eta^2 = .19$; "Total Empathy", F (1, 49) = 4.82, $p < .05$, partial $\eta^2 = .09$; and the IRI subscale "Empathetic Concern", F (1, 2812) = 4.44, $p < .05$, partial $\eta^2 = .002$.

A significant interaction between time and the 2 experimental conditions was found on "Dramatics Characteristics", F (1, 2812) = 6.86, $p < .01$, partial $\eta^2 = .002$.

Means and standard deviations for all variables in the primary school students' questionnaire are listed and potted in Table 3 and Figures 15 to 21.

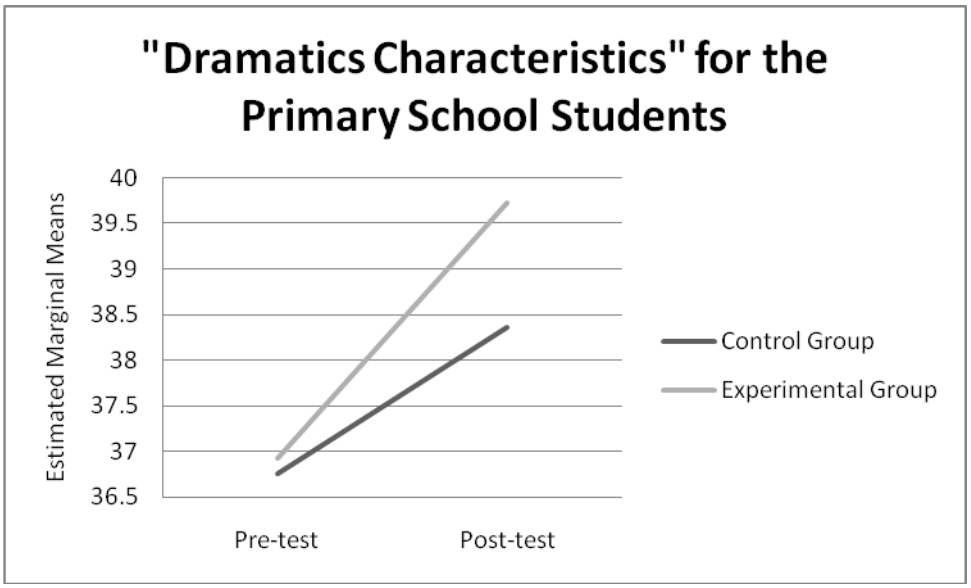

Figure 15.

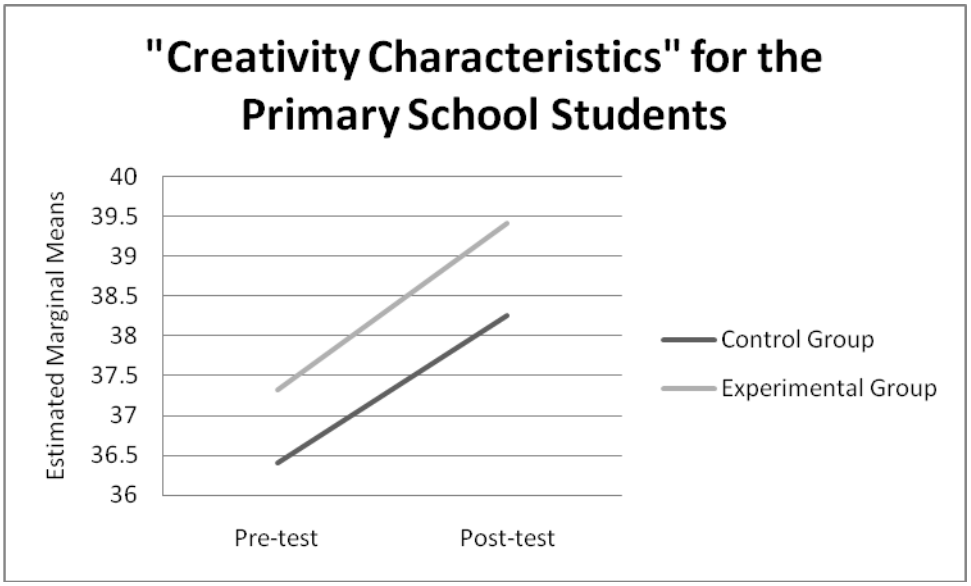

Figure 16.

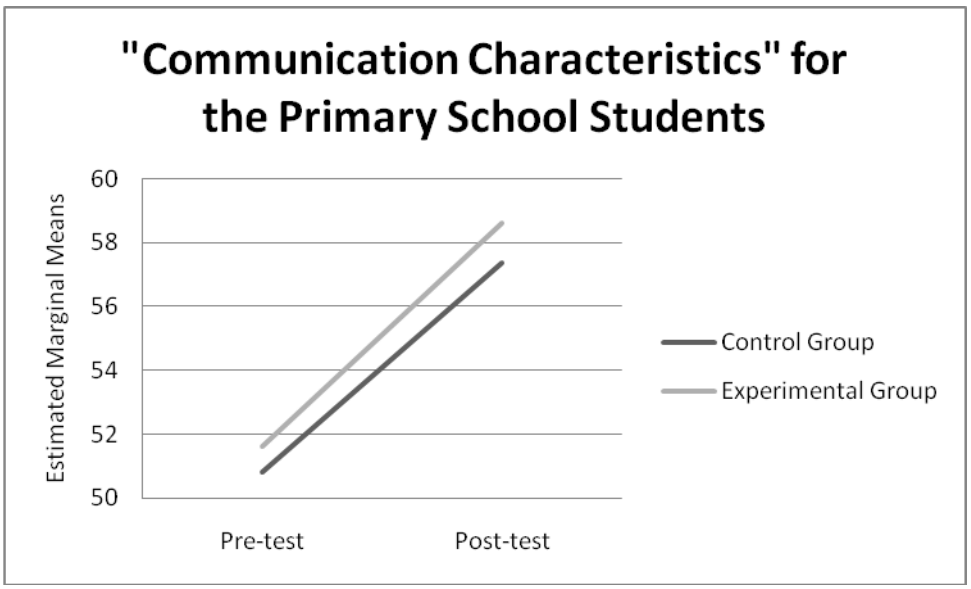

Figure 17.

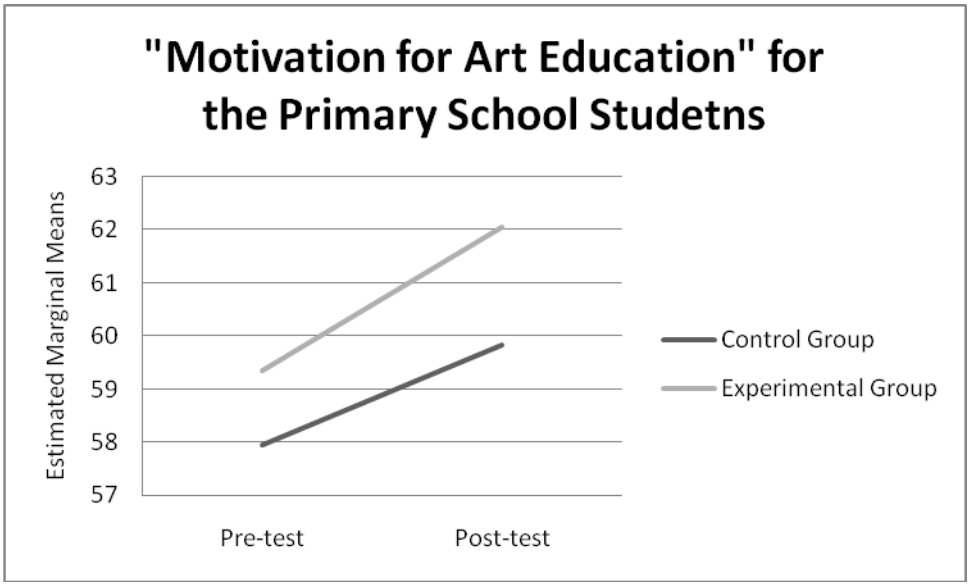

Figure 18.

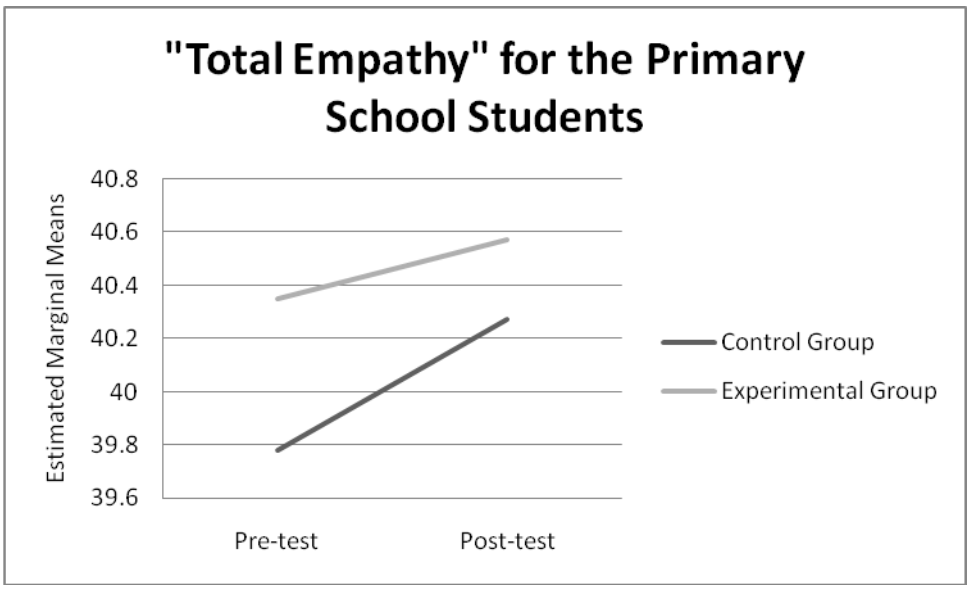

Figure 19.

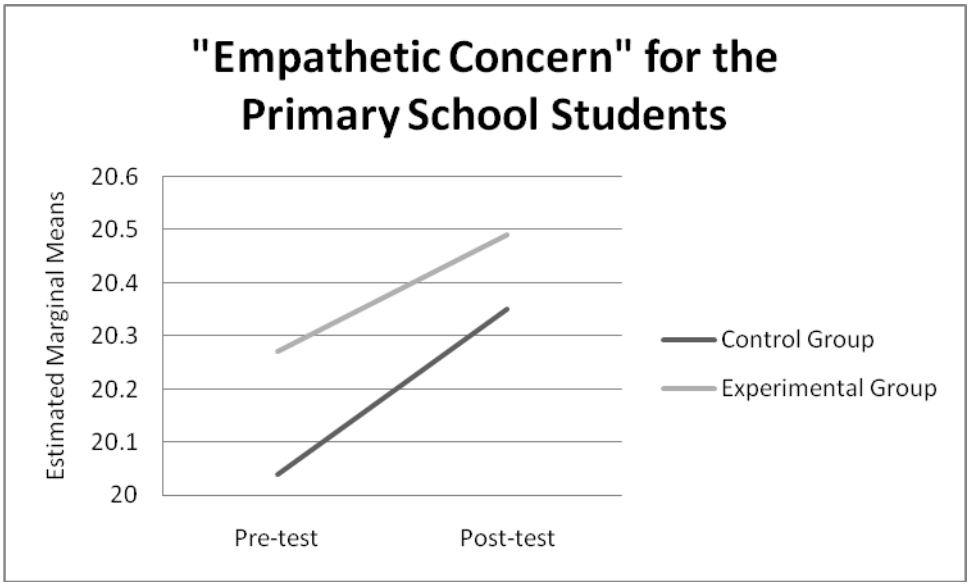

Figure 20.

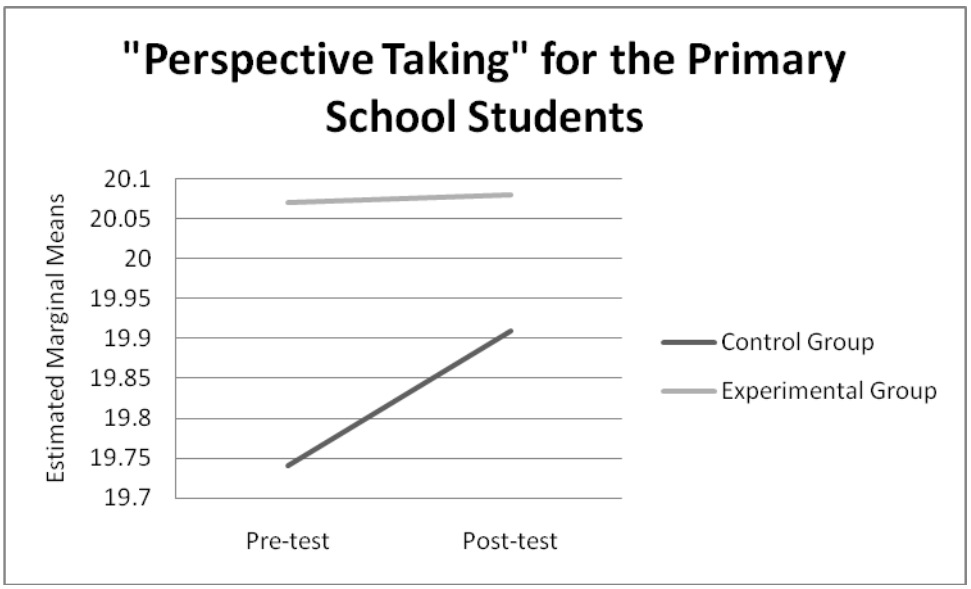

Figure 21.

Table 3

Means and standard deviations of the Dramatics, Creativity, Communication Characteristics, Motivation for Art Education, and Empathy for primary school students. (N = 2809)

	Pre-test				Post-Test			
	Control		Experimental		Control		Experimental	
	(*n* =955)		(*n* =1854)		(*n* =955)		(*n* =1854)	
Dramatics & Characteristics[+]*^	36.76 (11.79)		36.93	(11.62)	38.36 (11.43)		39.72	(10.70)
Creativity Characteristics[+]*	36.40 (11.52)		37.32	(11.34)	38.26 (10.69)		39.42	(10.59)
Communication Characteristics[+]	50.83 (16.57)		51.64	(16.37)	57.37 (16.59)		58.61	(16.17)
Motivation for Art Education[+]*	57.94 (19.93)		59.35	(19.77)	59.82 (19.57)		62.05	(18.85)
Empathy								
Total Empathy[+]*	39.78	(6.74)	40.35	(6.62)	40.27	(6.33)	40.57	(6.22)
Empathetic Concern[+]	20.04	(3.87)	20.27	(3.83)	20.35	(3.64)	20.49	(3.66)
Perspective Taking*	19.74	(3.92)	20.07	(3.81)	19.91	(3.47)	20.08	(3.44)

Note. [+]main time effect, *main experimental effect, ^interaction effect. Standard deviations are put in parentheses.

3.2.2 Story Telling Tasks

Significant main effects of time between the pre-test and post-test were found on

scores of “Theme”, F (1, 604) = 33.75, p < .001, partial η^2 = .05; “Description”, F (1, 604) = 4.03, p < .05, partial η^2 = .01; “Structure”, F (1, 604) = 41.43, p < .001, partial η^2 = .06; “Clarity”, F (1, 604) = 44.27, p < .001, partial η^2 = .07; “Audibility”, F (1, 604) = 45.25, p < .001, partial η^2 = .07; “Emotion”, F (1, 604) = 94.54, p < .001, partial η^2 = .13; “Use of Dialogue”, F (1, 604) = 21.96, p < .001, partial η^2 = .04; “Humor”, F (1, 604) = 140.73, p < .001, partial η^2 = .19; “Creativity”, F (1, 604) = 43.19, p < .001, partial η^2 = .07; and “Problem Identification and Solutions”, F (1, 604) = 88.09, p < .001, partial η^2 = .13.

Significant main effects for the 2 experimental conditions were found on the scores of “Total STT”, F (1, 604) = 19.72, p < .001, partial η^2 = .03; “Clarity”, F (1, 604) = 56.38, p < .001, partial η^2 = .09; “Use of Vocabulary”, F (1, 604) = 37.42, p < .001, partial η^2 = .06; “Audibility”, F (1, 604) = 54.04, p < .001, partial η^2 = .08; “Emotion”, F (1, 604) = 2, p < .05, partial η^2 = .01 F (1, 604) = 6.22, p < .05, partial η^2 = .01; and “Use of Dialogue”, F (1, 604) = 6.154, p < .05, partial η^2 = .01.

Significant interactions between time and the experimental conditions were found on the scores of “Total STT”, F (1, 604) = 10.86, p < .01, partial η^2 = .02; “Theme”, F (1, 604) = 6.02, p < .05, partial η^2 = .01; “Clarity”, F (1, 604) = 14.31, p < .001, partial η^2 = .02; “Use of Vocabulary”, F (1, 604) = 7.20, p < .01, partial η^2 = .01; “Audibility”, F (1, 604) = 5.02, p < .05, partial η^2 = .01; “Humor”, F (1, 604) = 4.93, p < .05, partial η^2 = .01; “Creativity”, F (1, 604) = 5.68, p < .05, partial η^2 = .01; and “Problem Identification & Solution”, F (1, 604)

= 5.68, $p < .05$, partial $\eta^2 = .01$.

Means and standard deviations for all STT criteria are listed and potted in Table 4 and Figures 22 to 33.

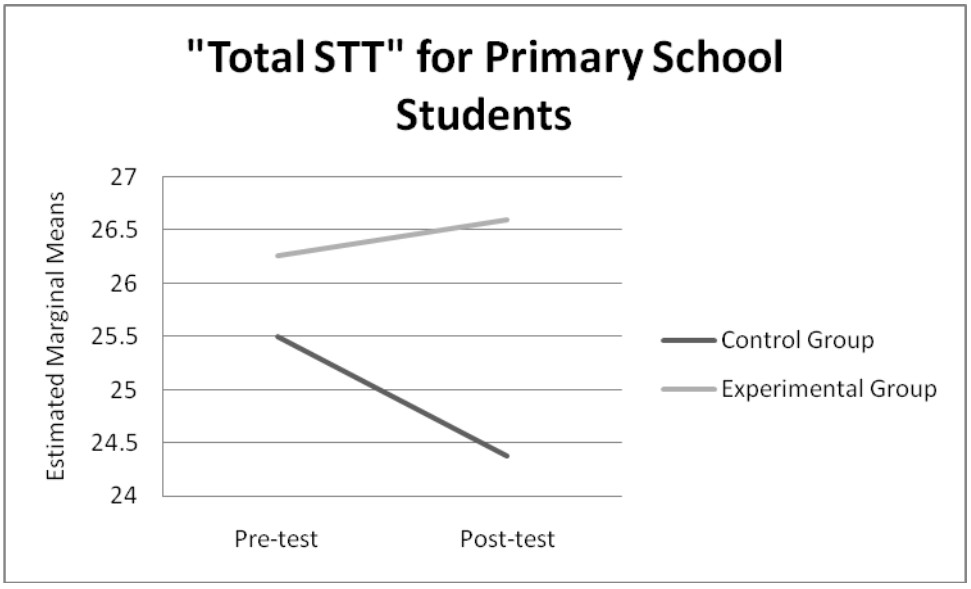

Figure 22.

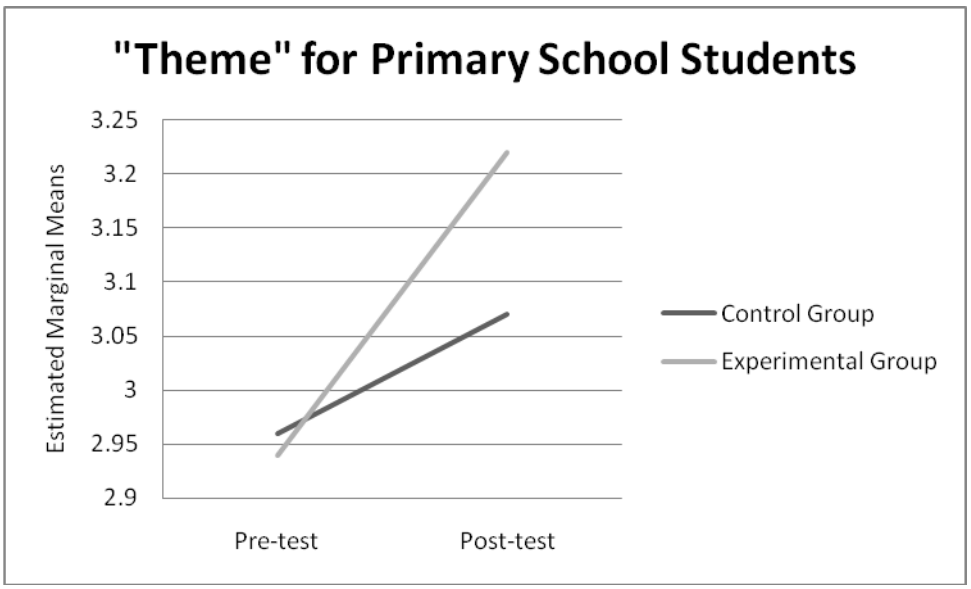

Figure 23.

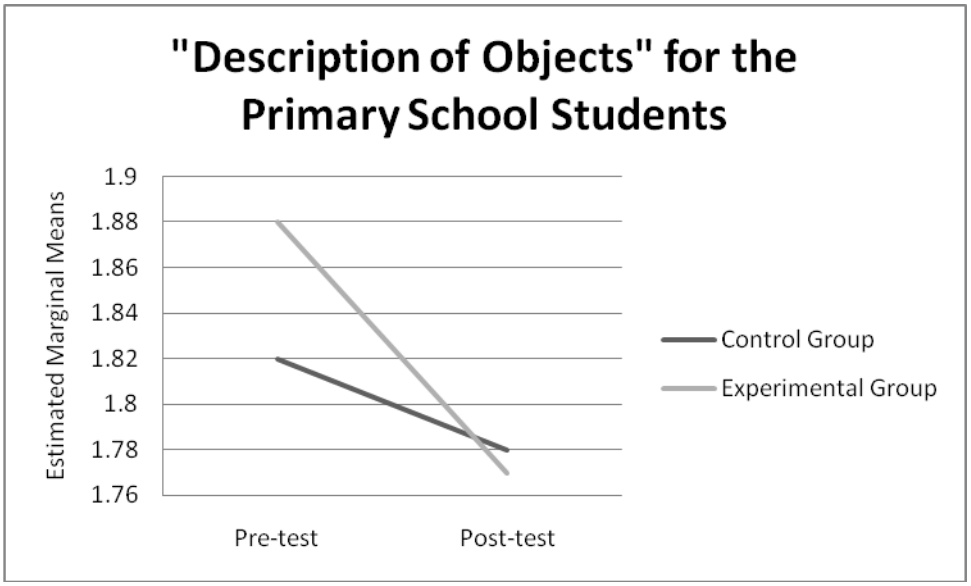

Figure 24.

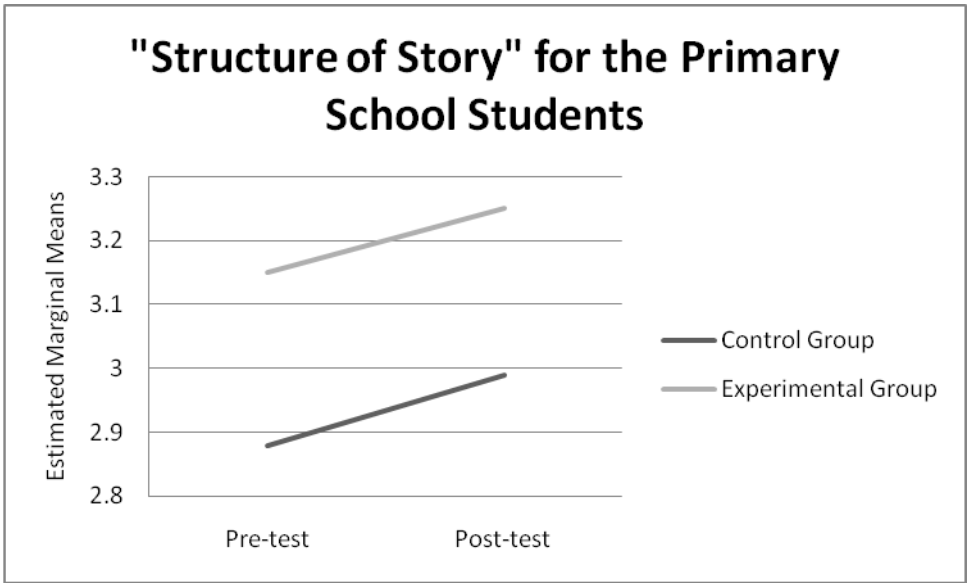

Figure 25.

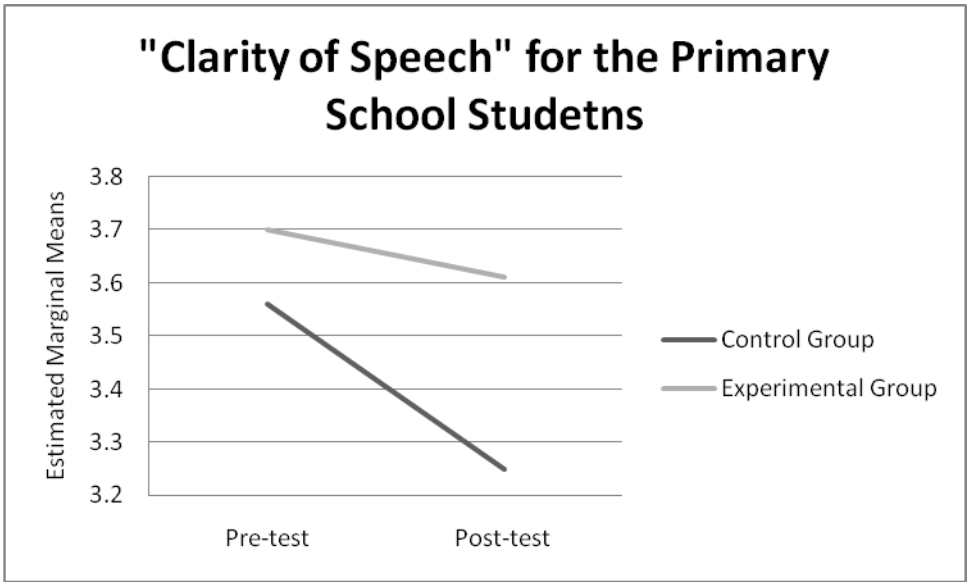

Figure 26.

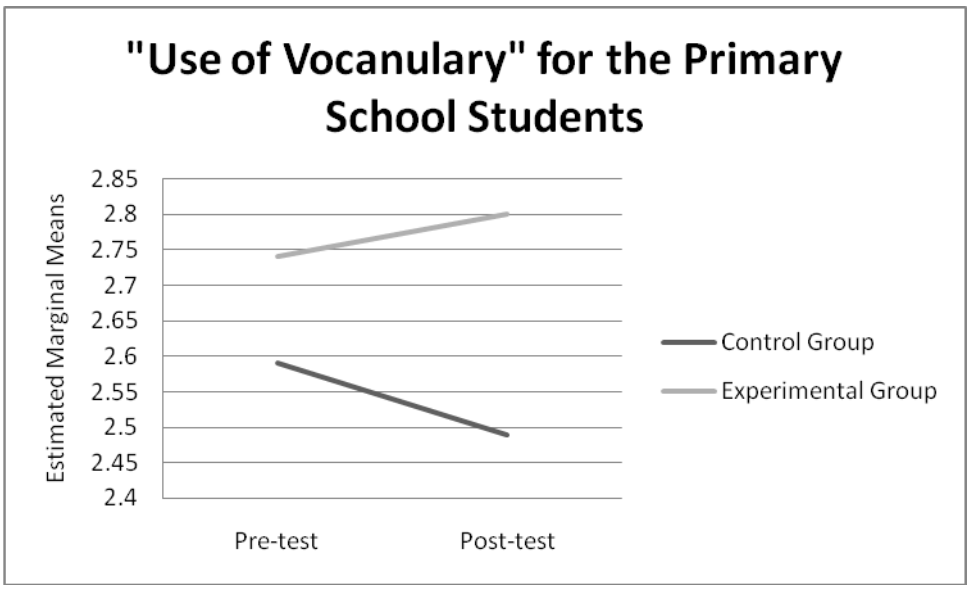

Figure 27.

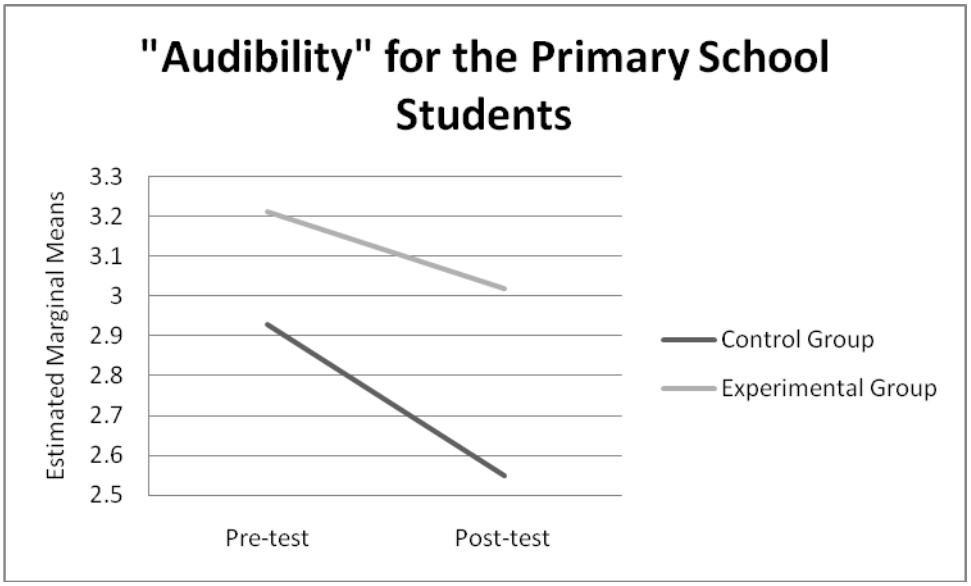

Figure 28.

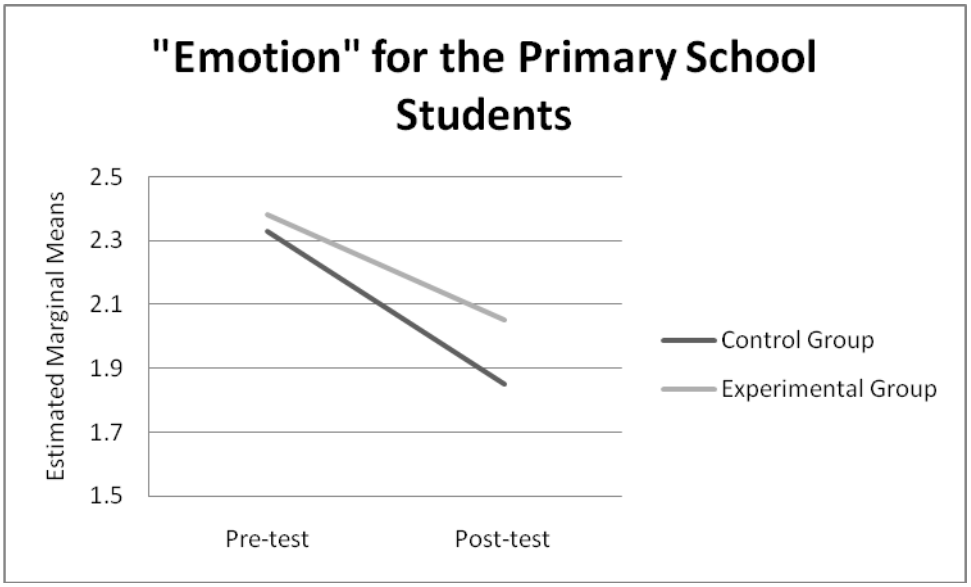

Figure 29.

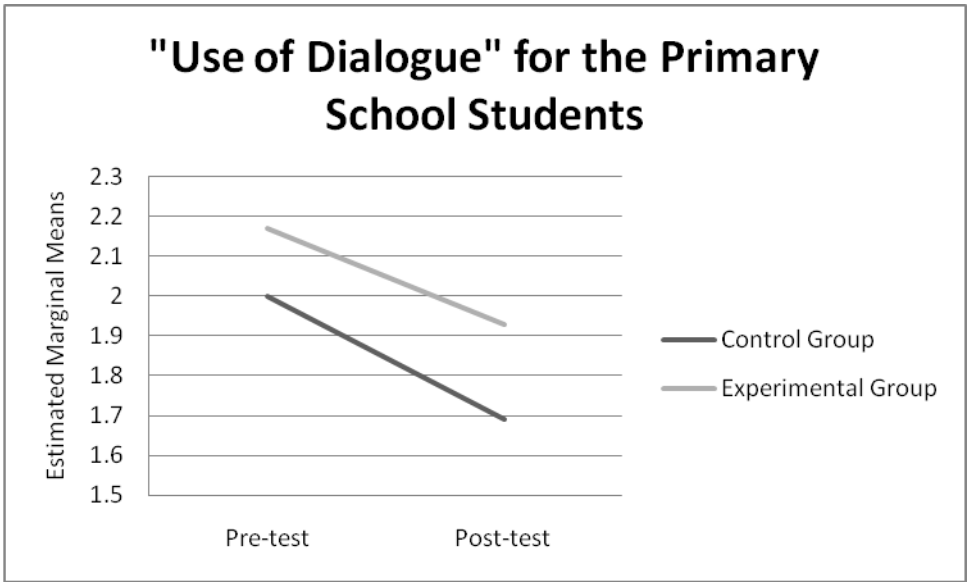

Figure 30.

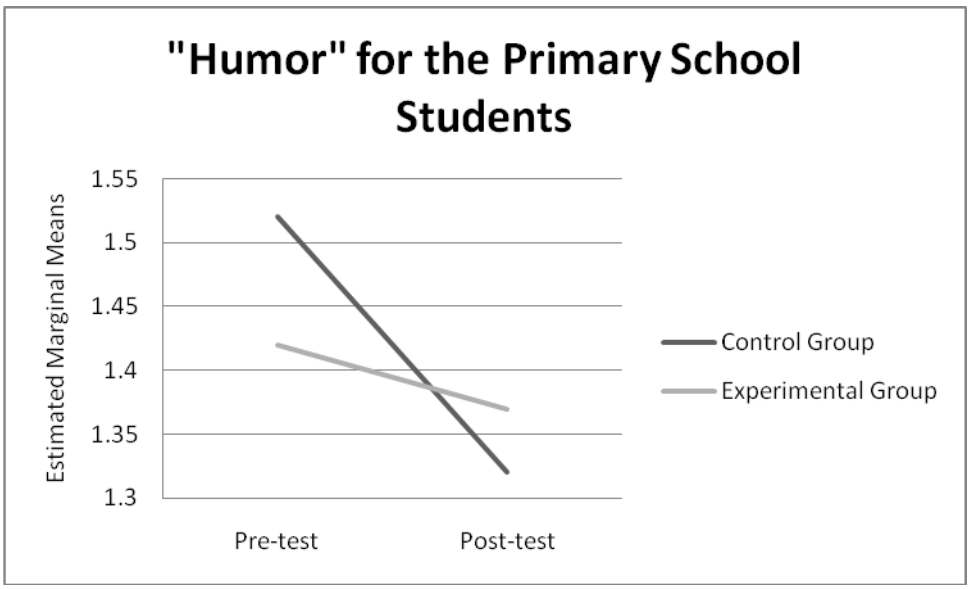

Figure 31.

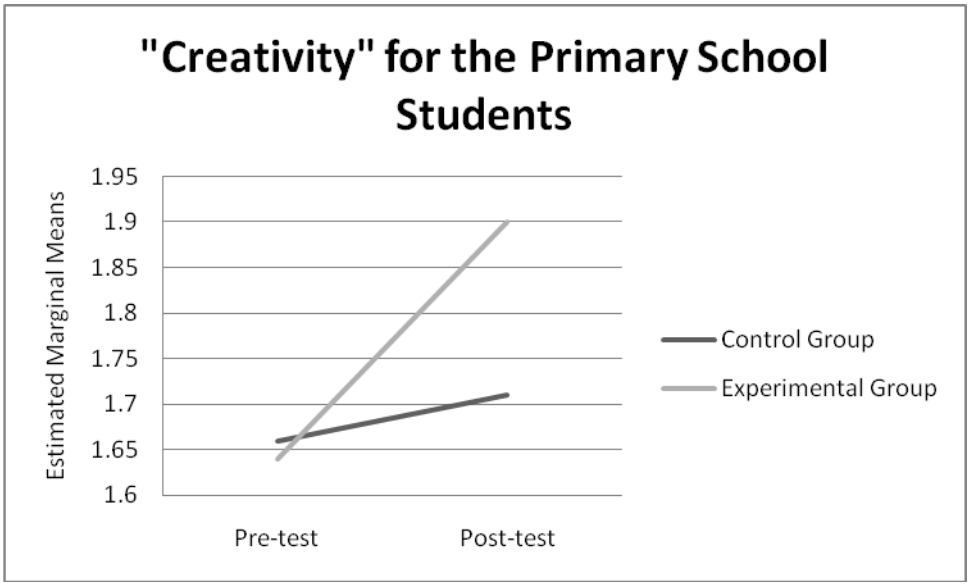

Figure 32.

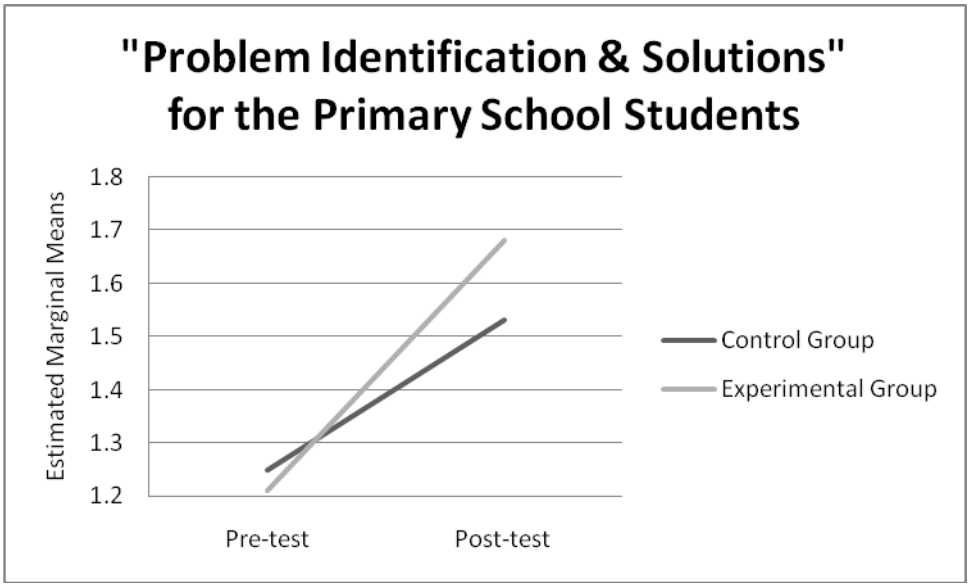

Figure 33.

Table 4

Primary School Students' means and standard deviations of the total STT score and scores for individual STT criterion. (N = 606)

	Pre-test				Post-Test			
	Control (*n* =417)		Experimental (*n* =189)		Control (*n* =417)		Experimental (*n* =189)	
STT Total*^	25.50	(4.71)	26.26	(4.23)	24.38	(4.81)	26.60	(4.95)
Theme^{+}^	2.96	(.72)	2.94	(.68)	3.07	(.54)	3.22	(.51)
Description^{+}	1.82	(.58)	1.88	(.65)	1.78	(.69)	1.77	(.65)
Structure^{+}	2.88	(.83)	2.99	(.74)	3.15	(.87)	3.25	(.84)
Clarity^{+}*^	3.56	(.51)	3.70	(.40)	3.25	(.60)	3.61	(.54)
Vocabulary*^	2.59	(.56)	2.74	(.54)	2.49	(.63)	2.80	(.52)
Audibility^{+}*^	2.93	(.69)	3.21	(.60)	2.55	(.83)	3.02	(.89)
Emotion^{+}*	2.33	(.66)	2.38	(.69)	1.85	(.77)	2.05	(.83)
Dialogue^{+}*	2.00	(1.13)	2.17	(1.22)	1.69	(.99)	1.93	(1.16)
Humor^{+}^	1.52	(.59)	1.42	(.56)	1.32	(.54)	1.37	(.56)
Creativity^{+}^	1.66	(.65)	1.64	(.76)	1.71	(.75)	1.90	(.83)
Problem Solving^{+}^	1.25	(.52)	1.21	(.50)	1.53	(.79)	1.68	(.84)

Note. $^{+}$main time effect, *main experimental effect, ^interaction effect. Standard deviations are put in parentheses.

3.3 Effects on Special School Students

3.3.1 Dramatics & Creativity Characteristics, Positive Emotion Responses, and IRI

Significant main effects for time between the pre-test and post-test were found on, "Dramatics & Creativity Characteristics", F (1, 49) = 8.33, $p < .01$, partial $\eta^2 = .15$; "Positive Emotion Responses", F (1, 49) = 9.14, $p < .01$, partial $\eta^2 = .16$; and the IRI subscale "Perspective Taking", F (1, 49) = 11.82, $p < .01$, partial $\eta^2 = .19$.

A significant main effect for the experimental conditions was found on "Dramatics & Creativity Characteristics", F (1, 49) = 7.20, $p < .01$, partial $\eta^2 = .13$.

Significant interactions between time and the experimental conditions were found on "Dramatics & Creativity Characteristics", F (1, 49) = 4.64, $p < .05$, partial $\eta^2 = .09$; "Positive Emotion Responses", F (1, 49) = 11.81, $p < .01$, partial $\eta^2 = .19$; "Total Empathy", F (1, 49) = 4.82, $p < .05$, partial $\eta^2 = .09$; and the IRI subscale "Empathetic Concern", F (1, 49) = 5.41, $p < .05$, partial $\eta^2 = .10$.

Means and standard deviations for all variables in the special school students questionnaire are listed in Table 5 and Figures 34 to 38.

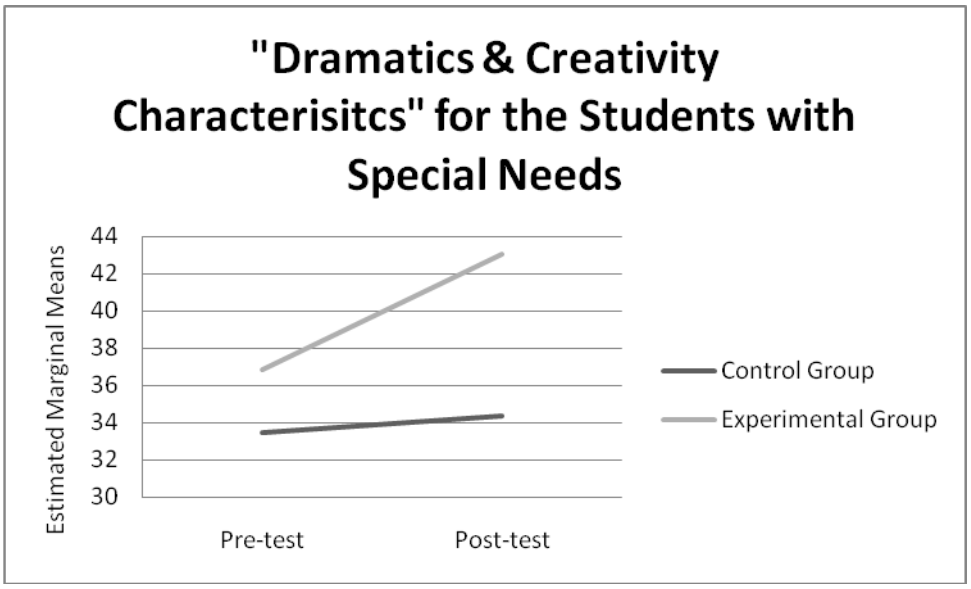

Figure 34.

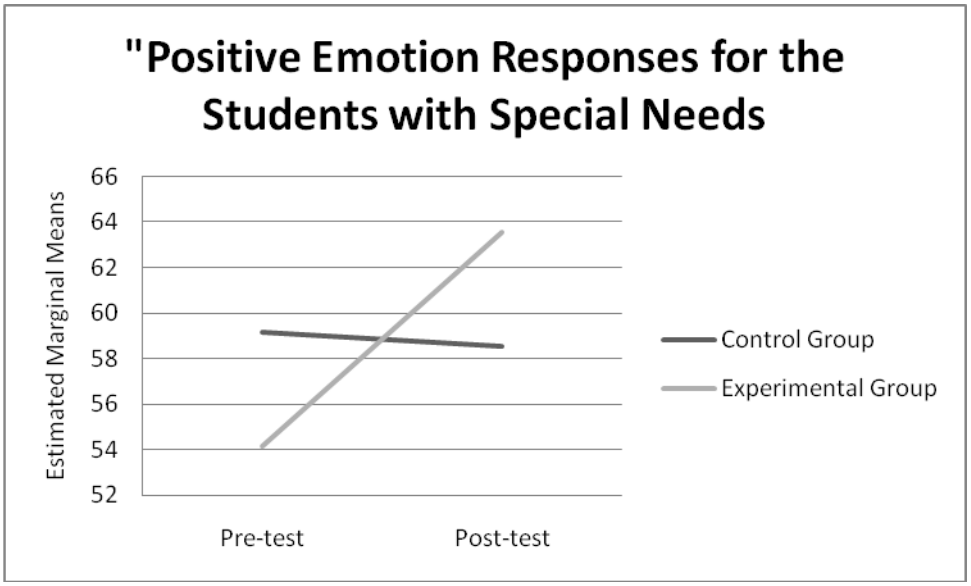

Figure 35.

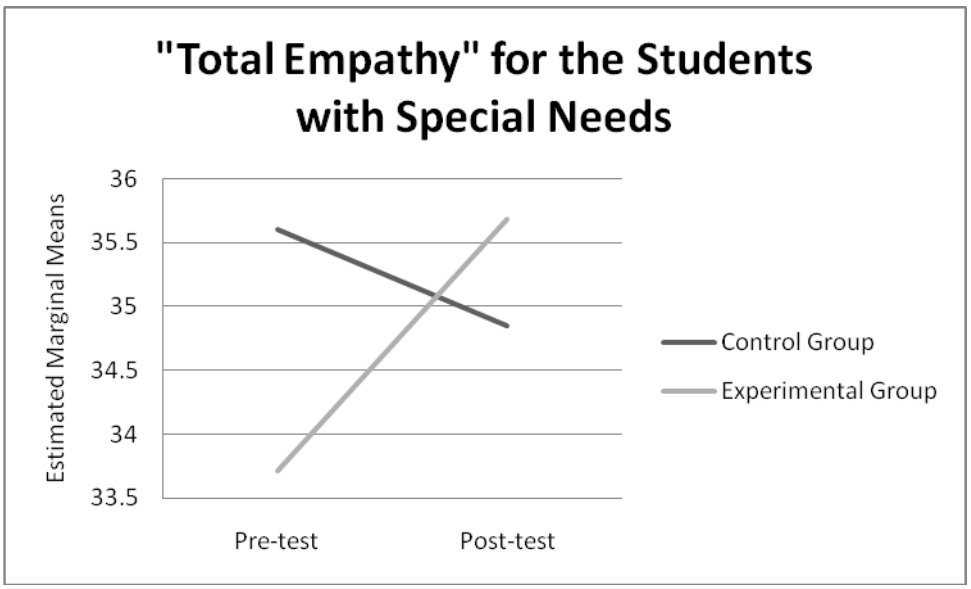

Figure 36.

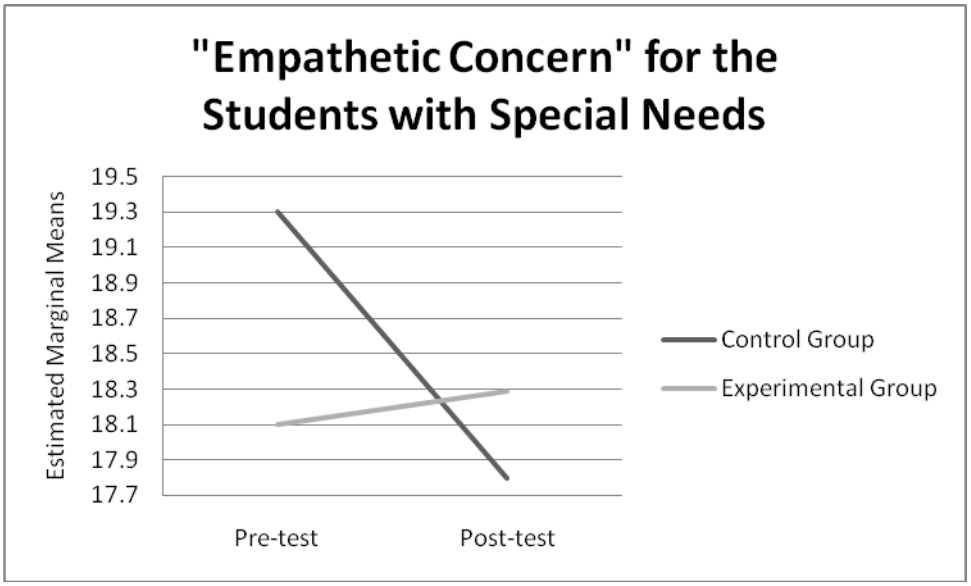

Figure 37.

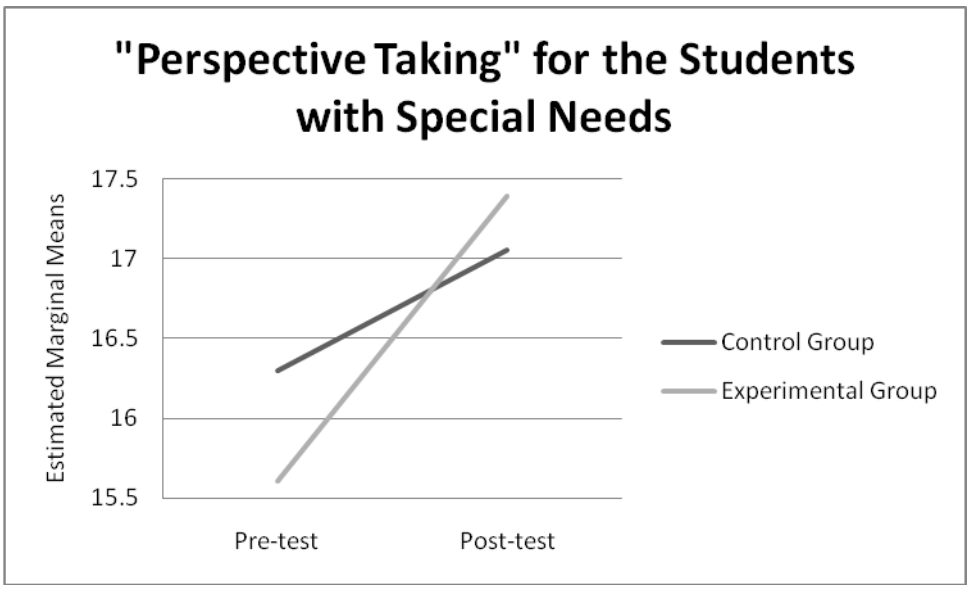

Figure 38.

Table 5

Means and standard deviations of the Dramatics & Creativity Characteristics, Positive Emotion Responses, and Empathy for students with special needs. (N = 51)

	Pre-test				Post-Test			
	Control (*n* =20)		Experimental (*n* =31)		Control (*n* =20)		Experimental (*n* =31)	
Dramatics & Creativity Characteristics^{+}*^	33.45	(4.93)	36.84	(10.90)	34.35	(8.03)	43.03	(9.26)
Positive Emotion Responses^{+}^	59.15	(7.06)	54.16	(9.71)	58.55	(5.07)	63.55	(7.30)
Empathy								
Total Empathy^	35.60	(3.45)	33.71	(2.51)	34.85	(3.69)	35.68	(3.17)
Empathetic Concern^	19.30	(2.34)	18.10	(1.37)	17.80	(2.02)	18.29	(1.62)
Perspective Taking^{+}	16.30	(1.53)	15.61	(1.91)	17.05	(2.14)	17.39	(1.93)

Note. $^{+}$main time effect, *main experimental effect, ^interaction effect. Standard deviations are put in parentheses.

3.3.2 Story Telling Task

Significant main effects between the pre-test and post-test were found on scores of "Theme", F (1, 32) = 4.60, $p < .05$, partial $\eta^2 = .13$; "Description", F (1, 32) = 5.25, $p < .05$, partial $\eta^2 = .14$; "Emotion", F (1, 32) = 8.02, $p < .01$, partial $\eta^2 = .20$; "Humor", F (1, 32) = 32.68, $p < .001$, partial $\eta^2 = .51$; and "Creativity", F (1, 32) = 5.53, $p < .05$, partial $\eta^2 = .15$.

Significant main effects for the experimental conditions were found on all STT variables except "Problem Solving"; with "Total STT", F (1, 32) = 35.01, $p < .001$, partial η^2

= .52; “Theme”, F (1, 32) = 25.67, p < .001, partial η^2 = .45; “Description”, F (1, 32) = 30.72, p < .001, partial η^2 = .49; “Structure”, F (1, 32) = 10.06, p < .01, partial η^2 = .24; “Clarity”, F (1, 32) = 13.75, p < .01, partial η^2 = .30; “Naming”, F (1, 32) = 5.99, p < .05, partial η^2 = .16; “Audibility”, F (1, 32) = 13.46, p < .01, partial η^2 = .30; “Emotion”, F (1, 32) = 7.04, p < .05, partial η^2 = .18; “Dialogue”, F (1, 32) = 9.11, p < .01, partial η^2 = .22; “Humor”, F (1, 32) = 28.57, p < .001, partial η^2 = .47; and “Creativity”, F (1, 32) = 8.61, p < .01, partial η^2 = .21.

A significant interaction between time and the experimental conditions was found on the score of “Humor” only, F (1, 32) = 11.77, p < .01, partial η^2 = .27.

Means and standard deviations for all STT criteria are listed and potted in Table 6 and Figures 39 to 50.

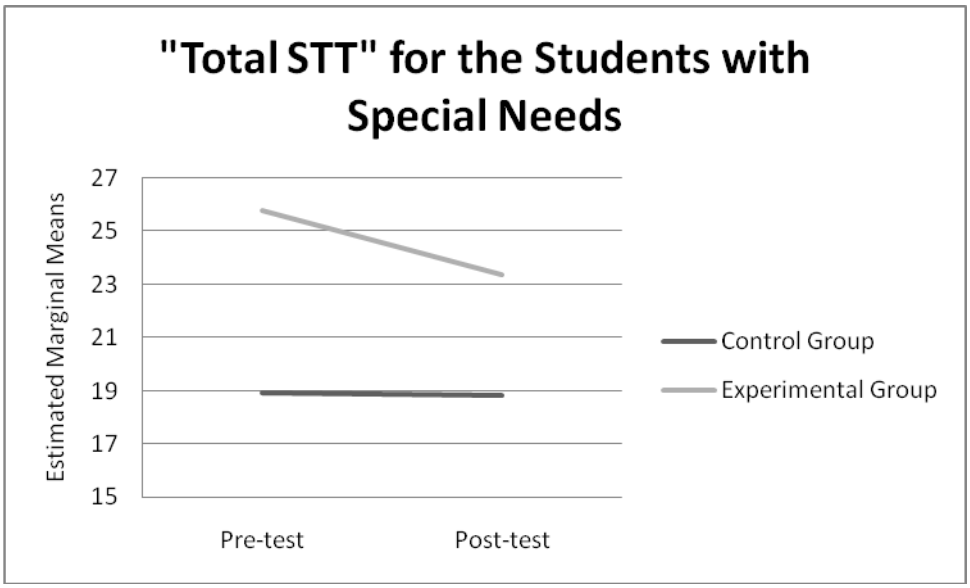

Figure 39.

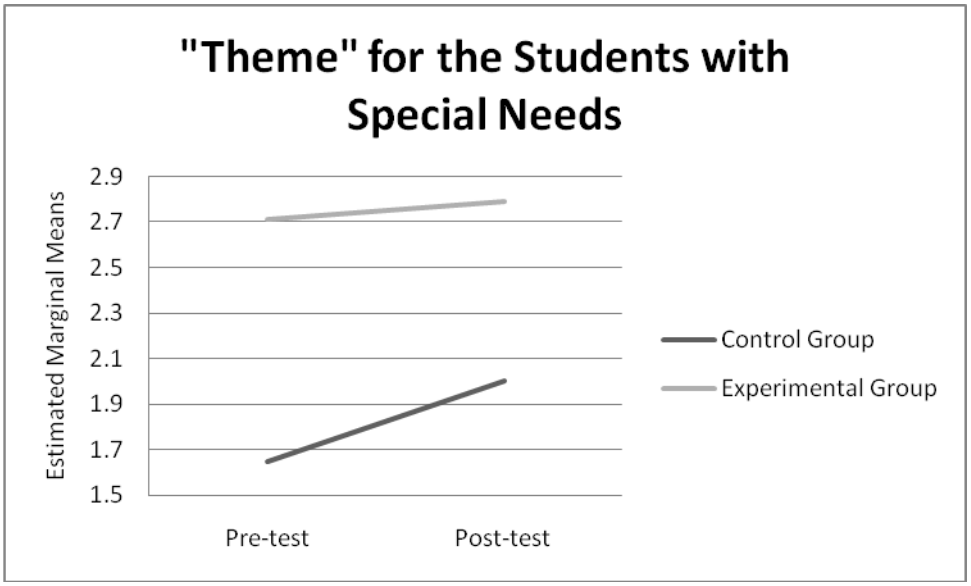

Figure 40.

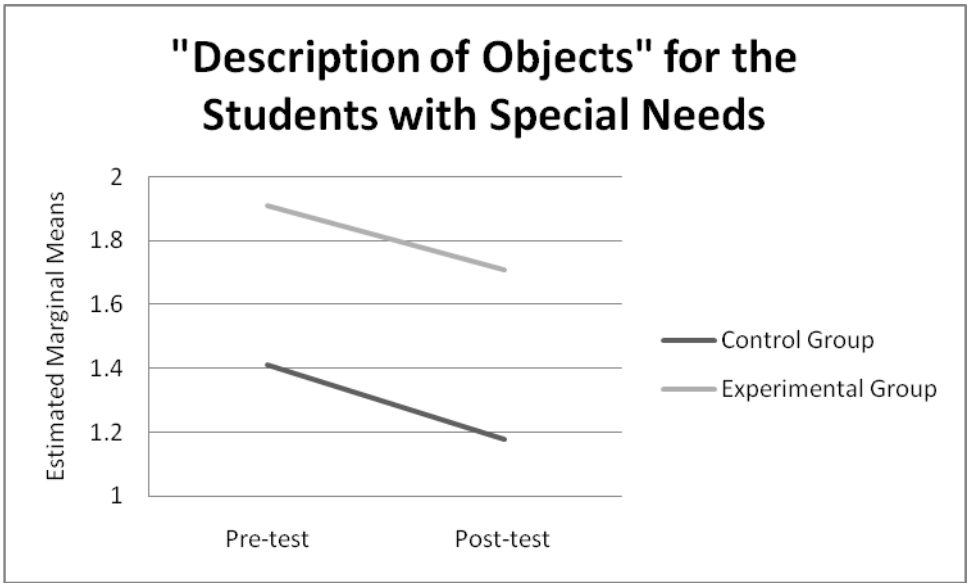

Figure 41.

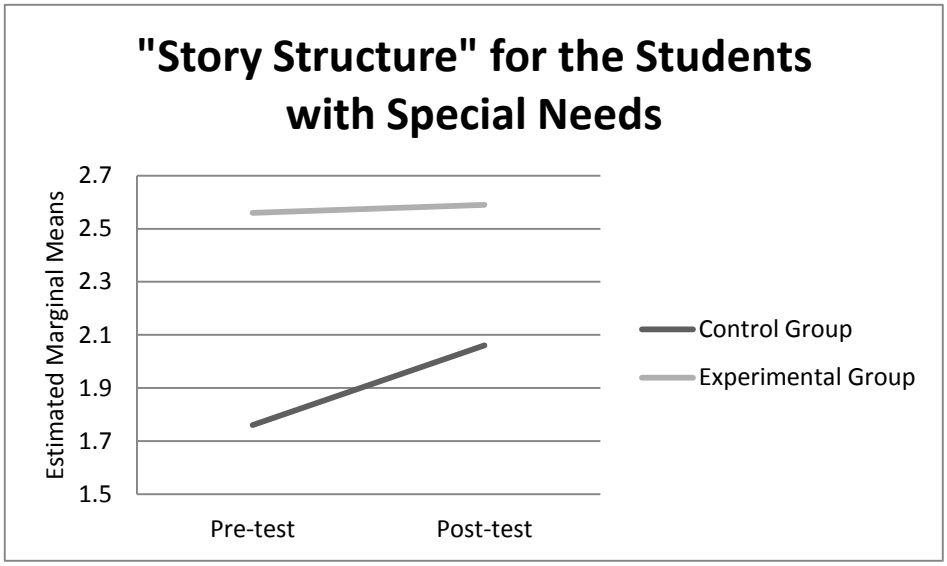

Figure 42.

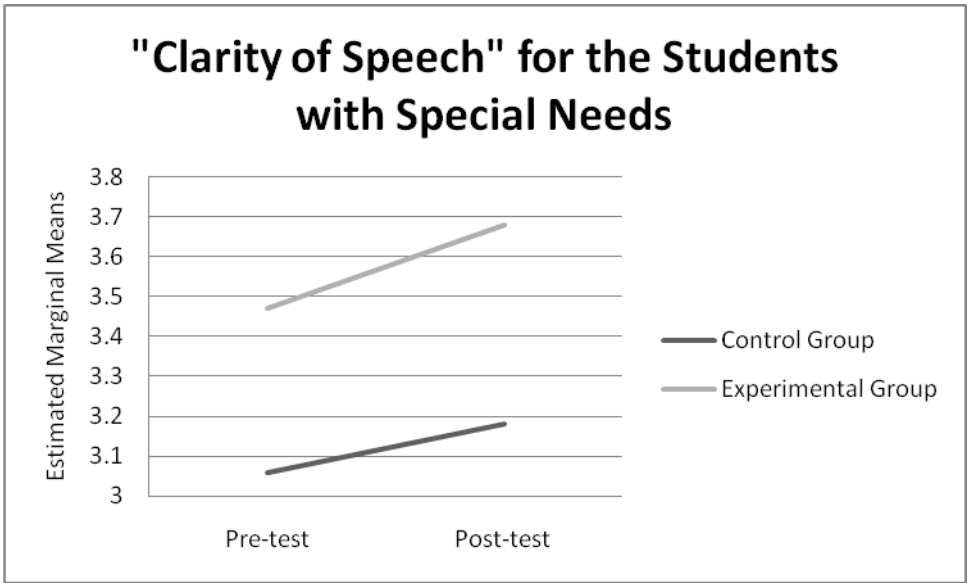

Figure 43.

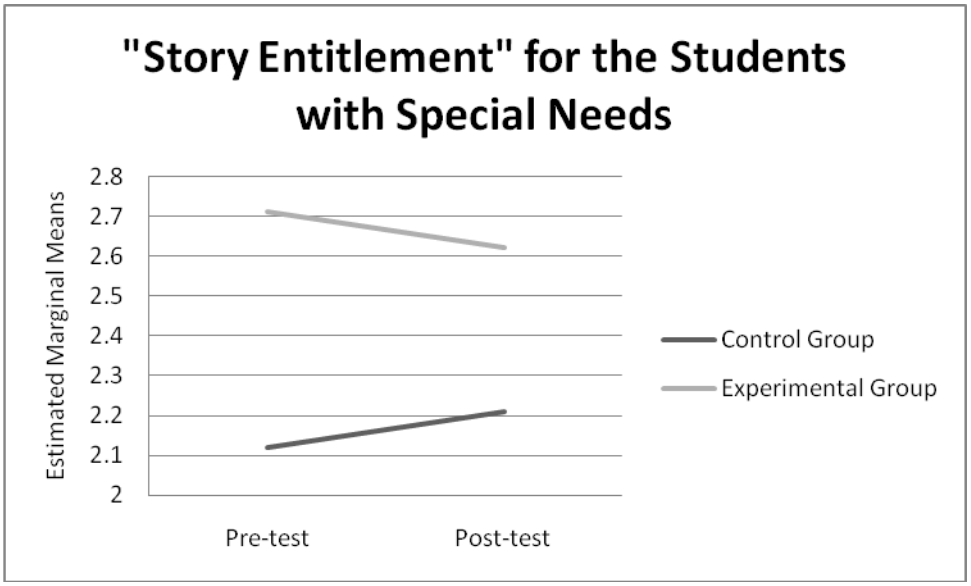

Figure 44.

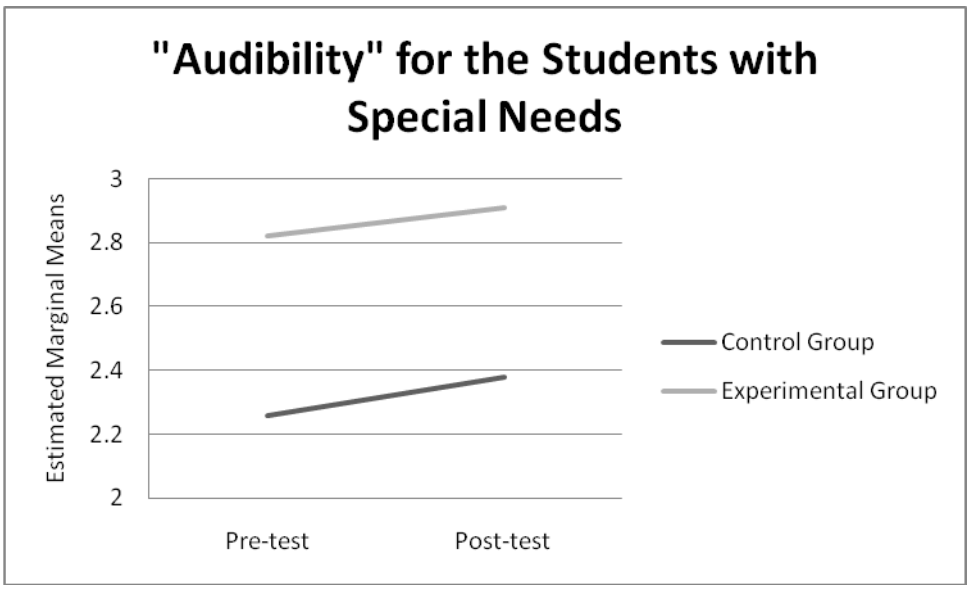

Figure 45.

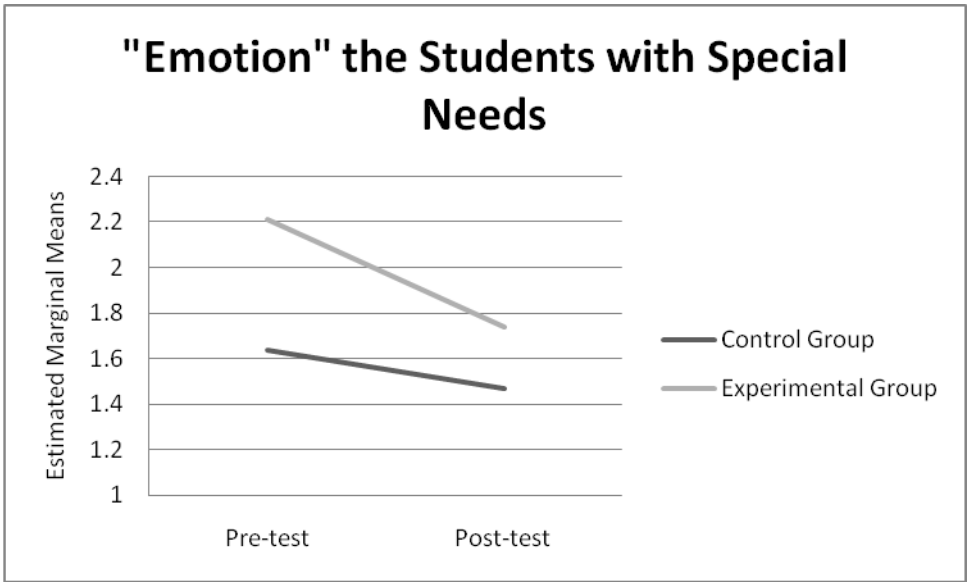

Figure 46.

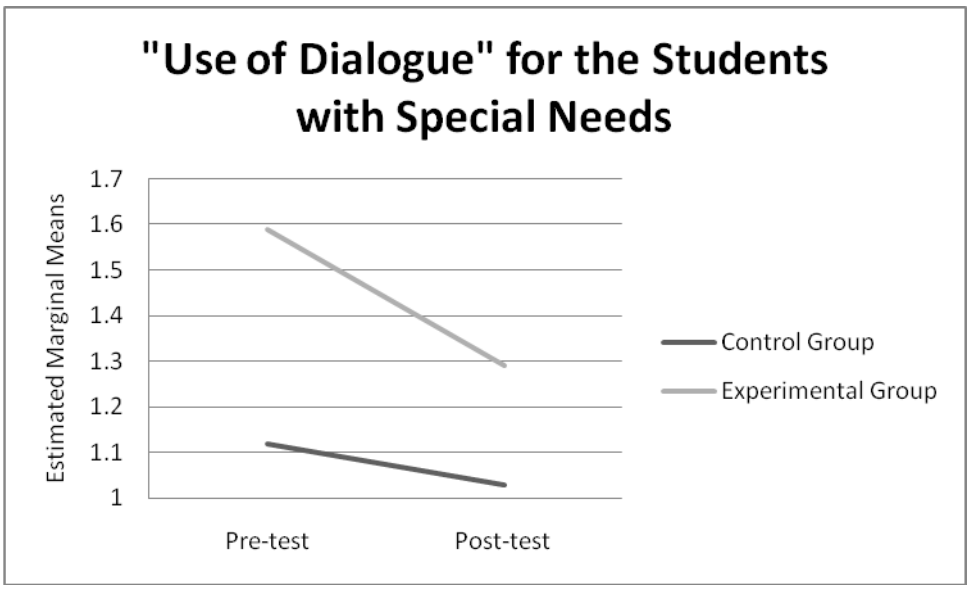

Figure 47.

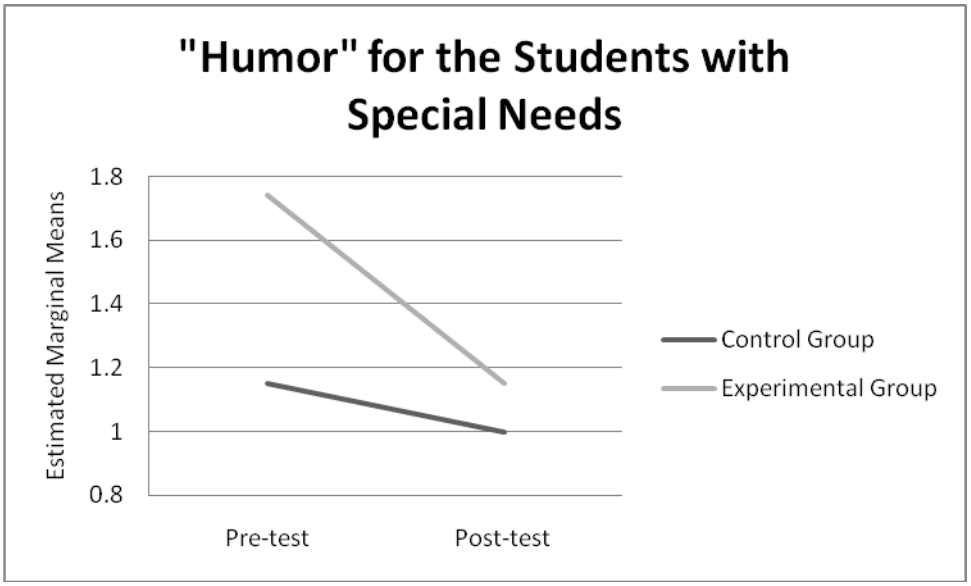

Figure 48.

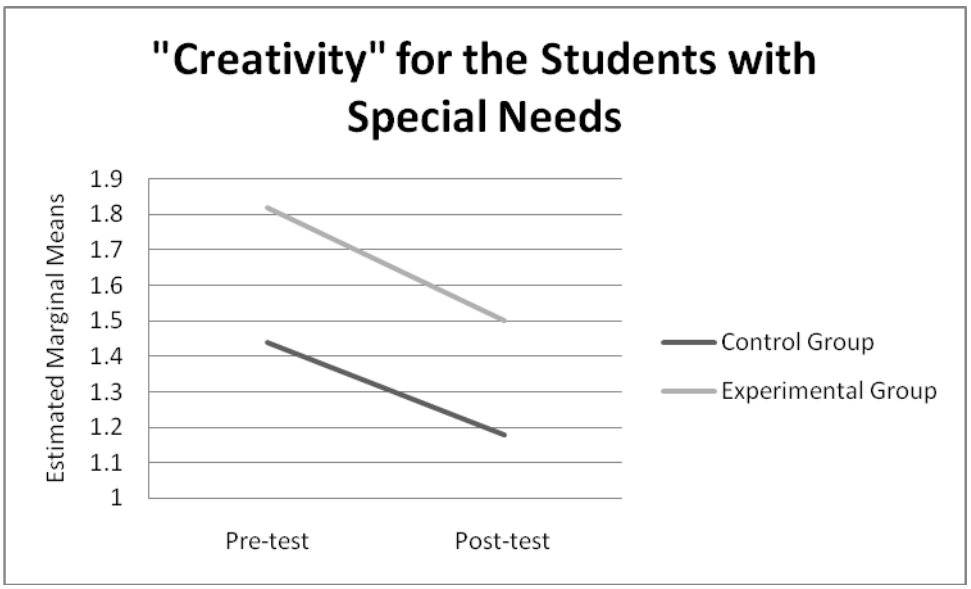

Figure 49.

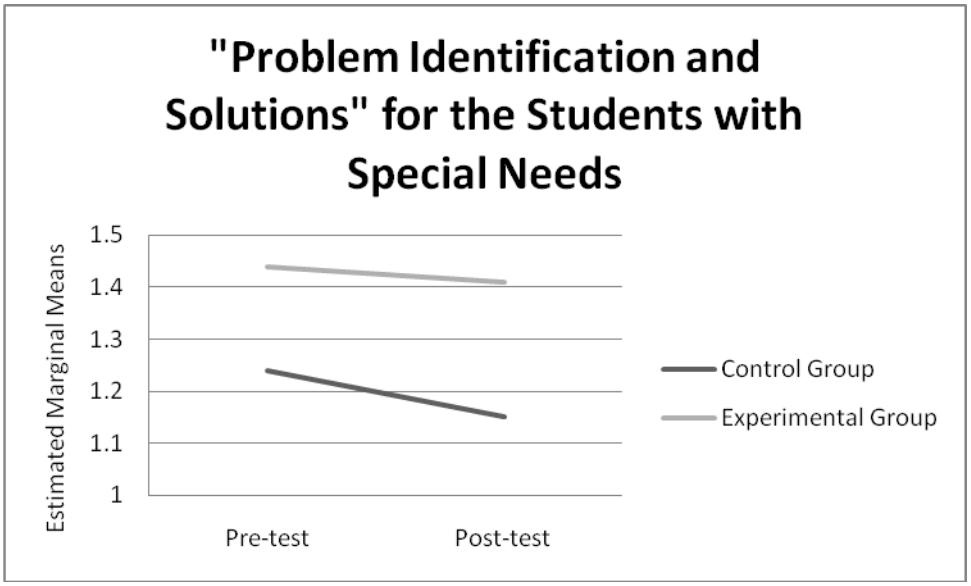

Figure 50.

Table 6

Special school students' means and standard deviations of the total STT score and scores for individual STT criterion. (N = 34)

	Pre-test				Post-Test			
	Control (*n* =17)		Experimental (*n* =17)		Control (*n* =17)		Experimental (*n* =17)	
STT Total*	18.94	(2.82)	25.78	(3.00)	18.82	(2.22)	23.38	(4.16)
Theme^{+}*	1.65	(.42)	2.71	(.85)	2.00	(.35)	2.79	(.69)
Description^{+}*	1.41	(.40)	1.91	(.32)	1.18	(.30)	1.71	(.50)
Structure*	1.76	(.53)	2.56	(.81)	2.06	(.56)	2.59	(.87)
Clarity*	3.06	(.24)	3.47	(.51)	3.18	(.50)	3.68	(.47)
Naming*	2.12	(.63)	2.71	(.66)	2.21	(.99)	2.62	(.63)
Audibility*	2.26	(.40)	2.82	(.39)	2.38	(.57)	2.91	(.62)
Emotion^{+}*	1.64	(.46)	2.21	(.50)	1.47	(.62)	1.74	(.64)
Dialogue*	1.12	(.28)	1.59	(.72)	1.03	(.12)	1.29	(.61)
Humor^{+}*^	1.15	(.23)	1.74	(.31)	1.00	(.00)	1.15	(.39)
Creativity^{+}*	1.44	(.58)	1.82	(.47)	1.18	(.30)	1.50	(.61)
Problem Solving*	1.24	(.47)	1.44	(.39)	1.15	(.23)	1.41	(.59)

Note. $^{+}$main time effect, *main experimental effect, ^interaction effect. Standard deviations are put in parentheses.

3.4 Effects on Kindergarten Teachers

For the teacher participants, experimental conditions referred to the experimental group which participants received training in drama education and practiced what they had learnt and the control group, which participants received training in drama education but was not required to practice, and those did not receive any training in drama education and did not practice at all.

Kindergarten

3.4.1 Creativity Fostering Teaching Index

Significant main effects for time between the pre-test and post-test were found on self-rated level in the following CFTIndex subscales: "Independent Learning", F (1, 140) = 5.23, $p < .05$, partial $\eta^2 = .04$; "Cooperative Learning", F (1, 140) = 4.82, $p < .05$, partial $\eta^2 = .03$; "Suspended Judgment", F (1, 140) = 8.33, $p < .01$, partial $\eta^2 = .06$; "Flexibility in Thinking", F (1, 140) = 5.53, $p < .05$, partial $\eta^2 = .04$; "Self Evaluation", F (1, 140) = 13.78, $p < .001$, partial $\eta^2 = .09$; "Opportunities for Trial", F (1, 140) = 4.94, $p < .05$, partial $\eta^2 = .03$; and "Positive Coping with Frustration", F (1, 140) = 5.61, $p < .05$, partial $\eta^2 = .04$.

No significant main effects for the experimental conditions were found on any of the CFTIndex subscales.

Interactions between time and the 2 experimental conditions were found on CFTIndex subscales "Cooperative Learning", F (1, 140) = 7.21, $p < .01$, partial $\eta^2 = .05$; "Building on

Students' Ideas", F (1, 140) = 6.83, $p < .05$, partial $\eta^2 = .05$; and "Positive Coping with Frustration", F (1, 140) = 4.34, $p < .04$, partial $\eta^2 = .03$.

3.4.2 Observed outcome on students

Significant main effect for time between the pre-test and post-test and for the experimental conditions were found, with F (1, 122) = 19.54, $p < .001$, partial $\eta^2 = .14$ and F (1, 122) = 7.13, $p < .01$, partial $\eta^2 = .06$.

No interaction between time and the experimental conditions was found.

3.4.3 Teachers' self-efficacy

A significant main effect for time between the pre-test and post-test was found, with F (1, 140) = 6.89, $p < .05$, partial $\eta^2 = .05$.

No significant main effects for the experimental conditions and no significant interaction between time and the experimental conditions were found.

Means and standard deviations for all teacher variables in the kindergarten sample are listed and potted in Table 7 and Figures 51 to 61.

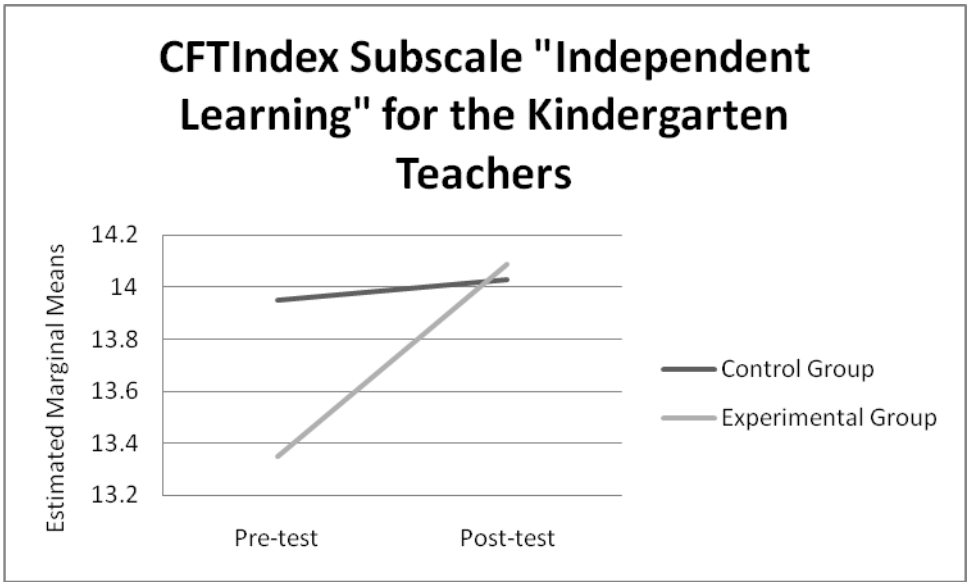

Figure 51.

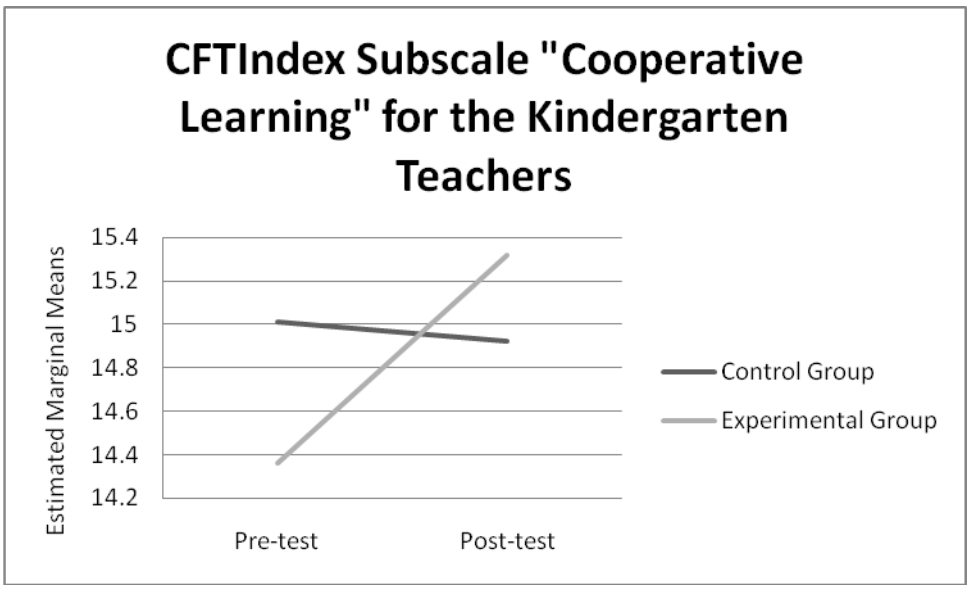

Figure 52.

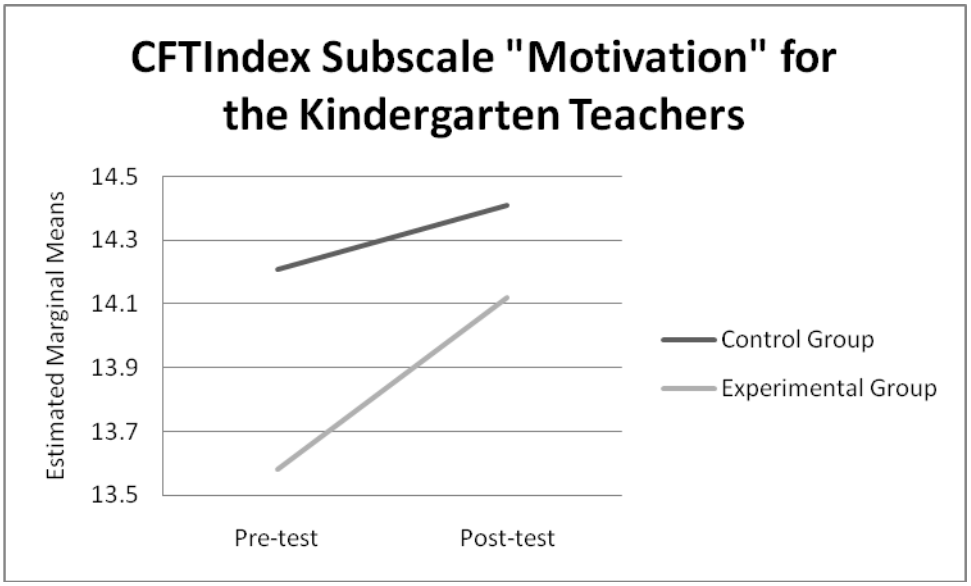

Figure 53.

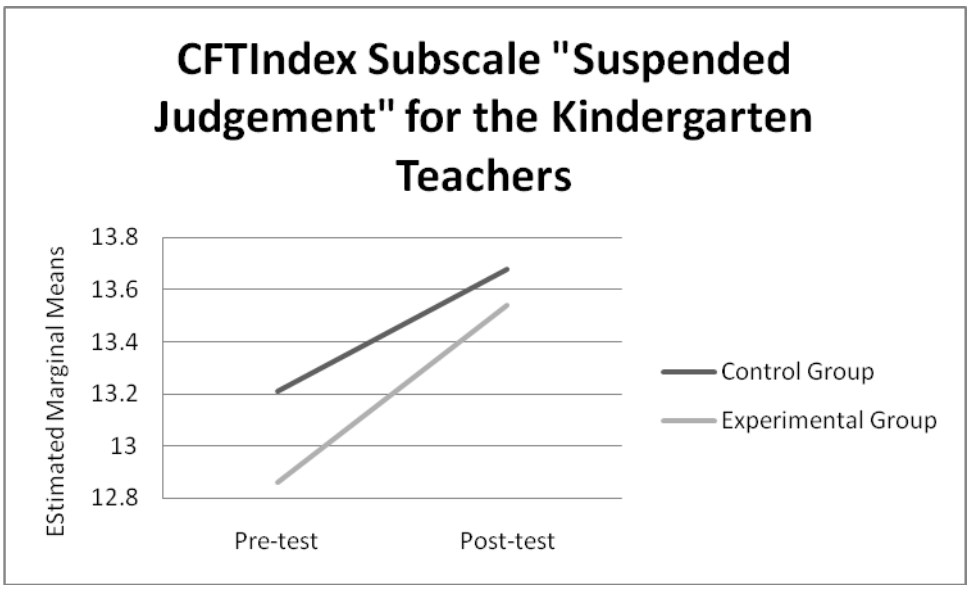

Figure 54.

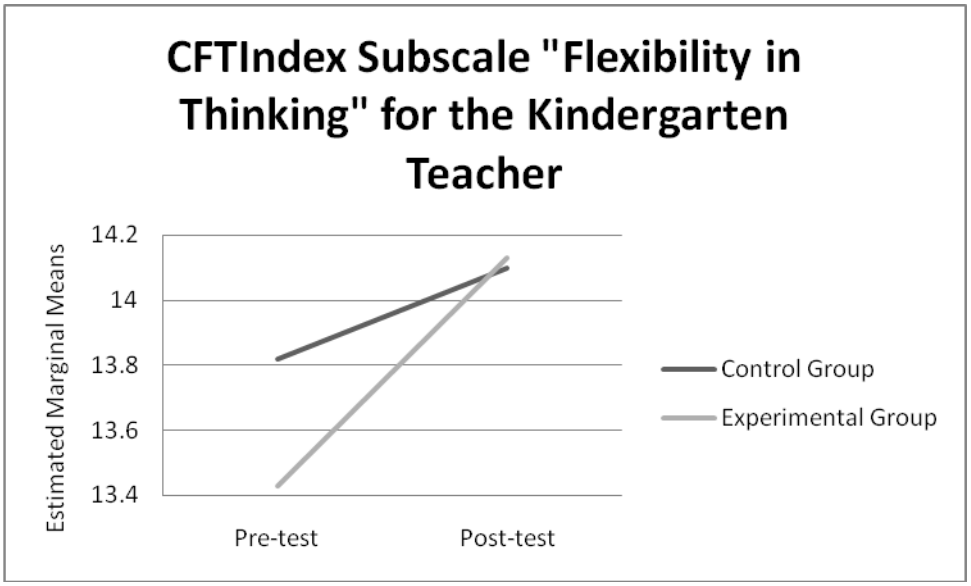

Figure 55.

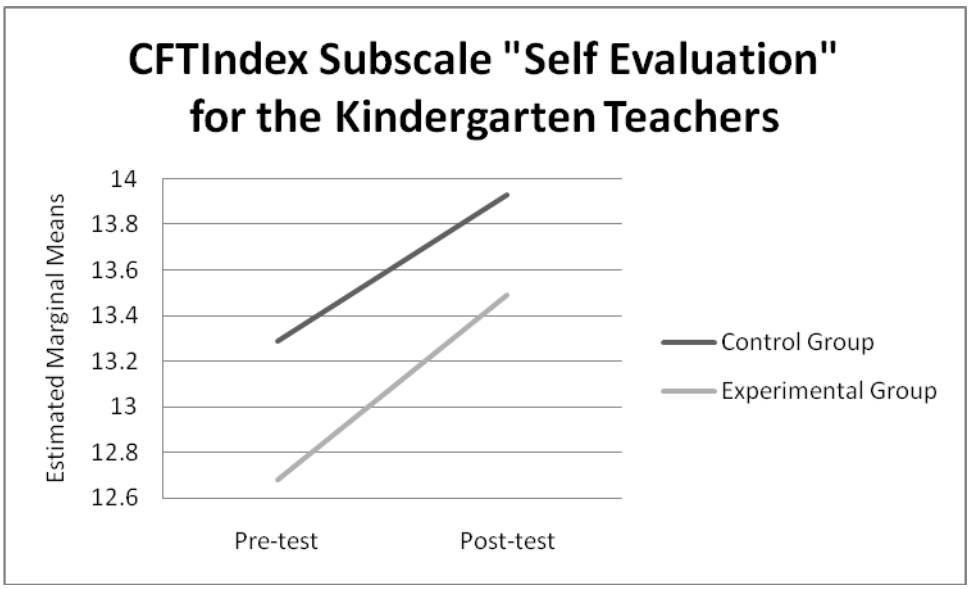

Figure 56.

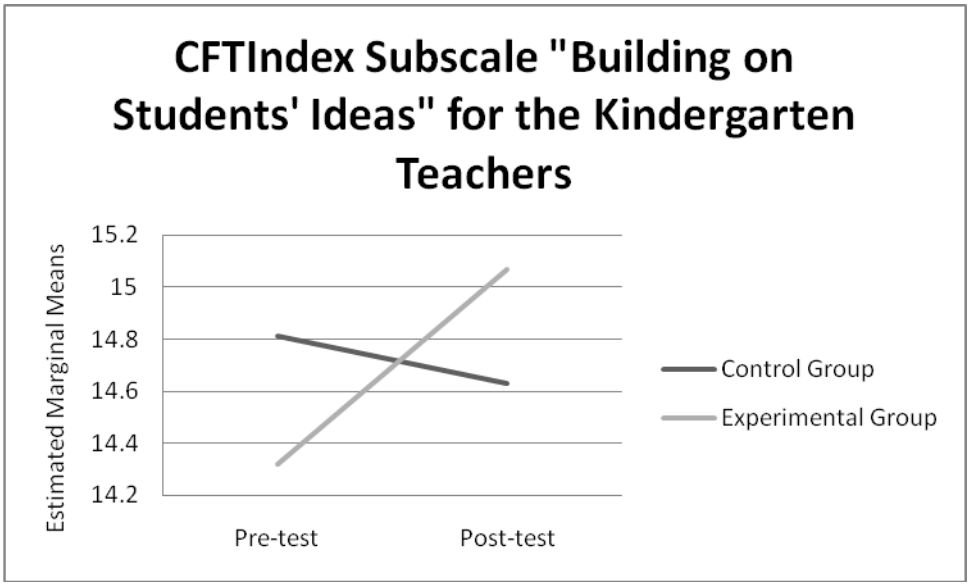

Figure 57.

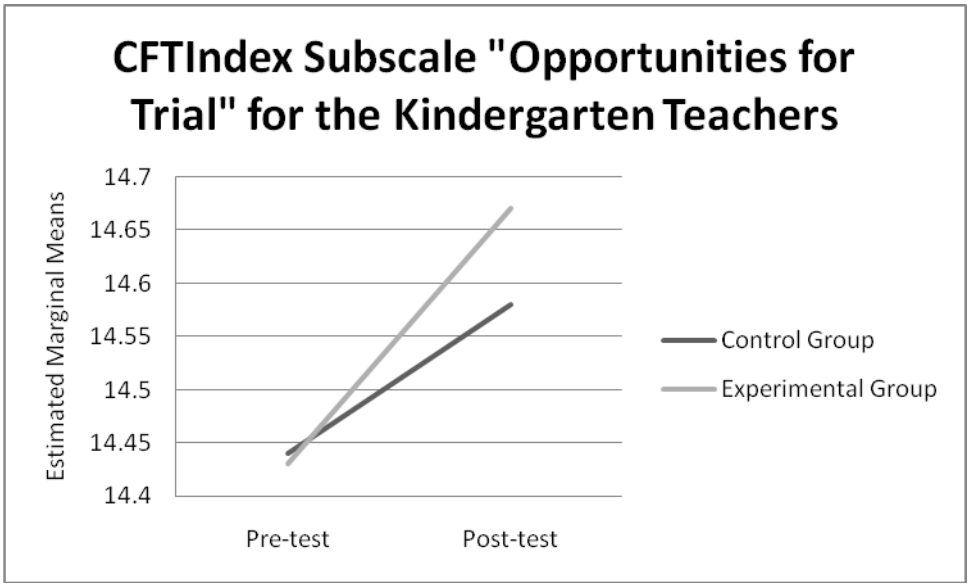

Figure 58.

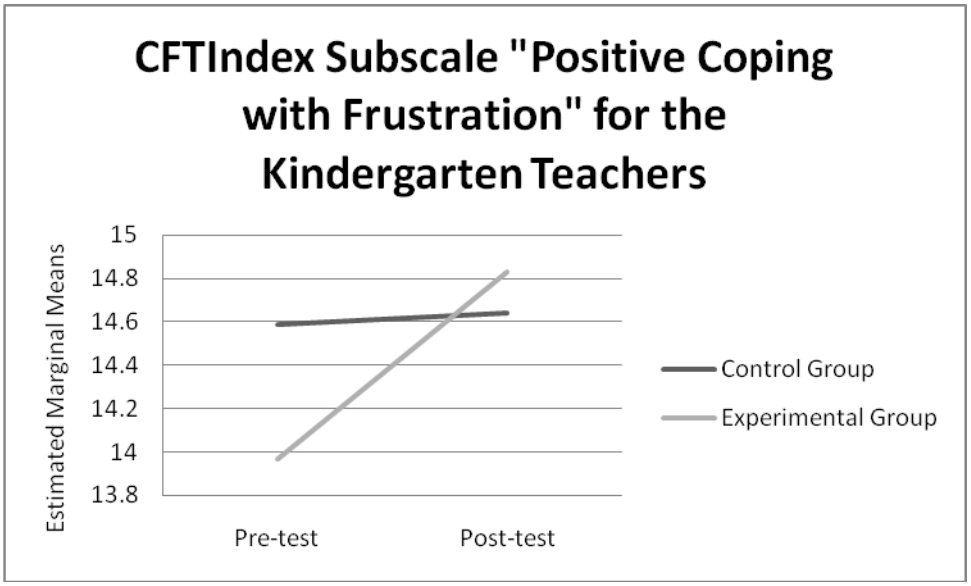

Figure 59.

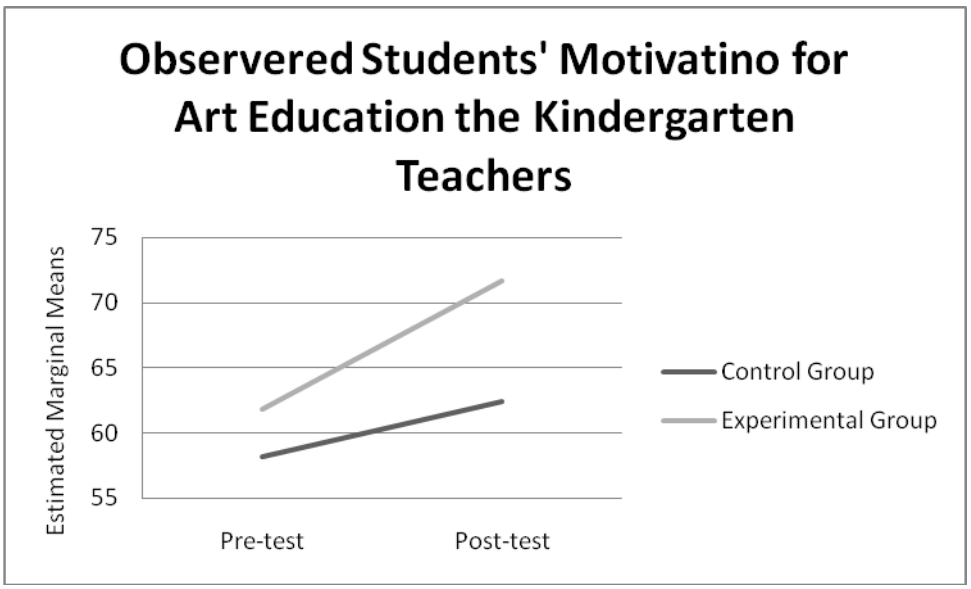

Figure 60.

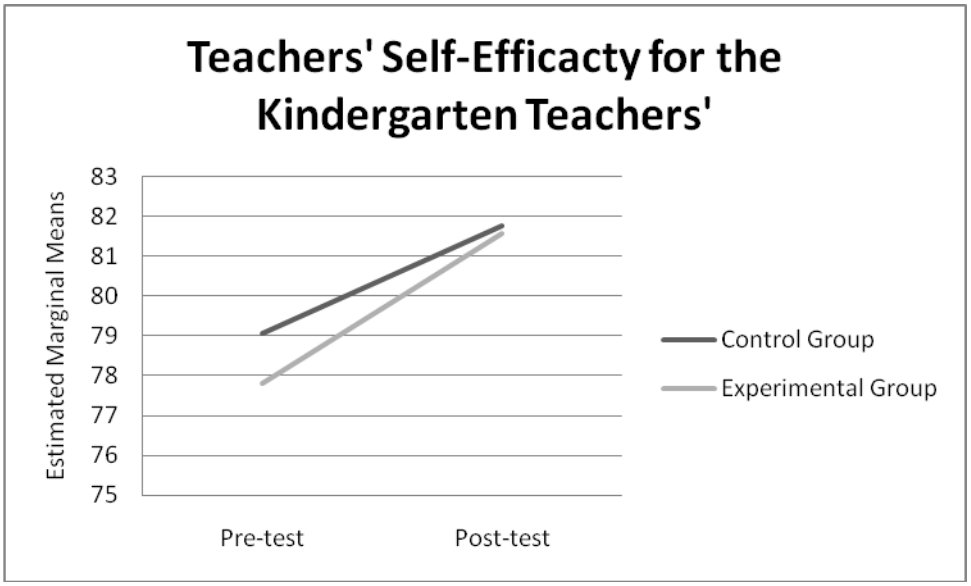
Teachers' Self-Efficacty for the Kindergarten Teachers'
Estimated Marginal Means
83
82
81
80
79
78
77
76
75
Pre-test
Post-test
Control Group
Experimental Group

Figure 61.

Table 7

Means and standard deviations of the CFTIndex Subscales, Observed Outcome on Students', and Teachers' Self-Efficacy for Kindergarten Teachers. (N = 151)

	Pre-test				Post-Test			
	Control		Experimental		Control		Experimental	
CFTIndex (n = 142)								
IL^{+}^	13.95	(1.95)	13.35	(1.77)	14.03	(2.44)	14.09	(1.71)
CL^{+}^	15.01	(1.87)	14.36	(1.91)	14.92	(2.50)	15.32	(1.79)
MOV	14.21	(2.17)	13.58	(2.12)	14.41	(2.72)	14.12	(1.98)
SJ^{+}	13.21	(2.12)	12.86	(1.87)	13.68	(2.36)	13.54	(1.89)
FT^{+}	13.82	(2.09)	13.43	(1.87)	14.10	(2.47)	14.13	(2.12)
SE^{+}	13.29	(2.18)	12.68	(1.76)	13.93	(2.48)	13.49	(2.00)
BSI^	14.81	(1.96)	14.32	(2.00)	14.63	(2.28)	15.07	(1.91)
OT^{+}	14.44	(1.87)	14.43	(1.45)	14.58	(2.44)	14.67	(1.57)
PCF^{+}^	14.59	(1.87)	13.97	(1.90)	14.64	(2.28)	14.83	(1.71)
Observed Outcome^{+}* (n = 124)	58.17	(20.03)	61.83	(16.85)	62.38	(17.70)	71.65	(7.80)
Teachers' Self-Efficacy^{+} (n = 127)	79.05	(10.44)	77.82	(10.49)	81.77	(16.25)	81.56	(10.03)

Note. $^{+}$main time effect, *main experimental effect, ^interaction effect. Standard deviations are put in parentheses.

3.5 Effects on Primary and special school teachers

3.5.1 Creativity Fostering Teaching Index

A significant main effect for time between the pre-test and post-test was found on self-rated level in the the CFTIndex subscales "Motivation", with F (1, 352) = 7.27, p < .01, partial η^2 = .02.

Significant main effects for the experimental conditions were found on the following

CFTIndex subscales; “Independent Learning”, F (1, 352) = 13.24, $p < .001$, partial $\eta^2 = .04$; “Cooperative Learning”, F (1, 352) = 13.96, $p < .001$, partial $\eta^2 = .04$; “Motivation”, F (1, 352) = 5.32, $p < .05$, partial $\eta^2 = .02$; “Suspended Judgment”, F (1, 352) = 9.09, $p < .01$, partial $\eta^2 = .03$; “Flexibility in Thinking”, F (1, 352) = 8.61, $p < .01$, partial $\eta^2 = .02$; “Self Evaluation”, F (1, 352) = 6.73, $p < .05$, partial $\eta^2 = .02$; and “Positive Coping with Frustration”, F (1, 352) = 5.22, $p < .05$, partial $\eta^2 = .02$.

No interaction between time and the two experimental conditions was found.

3.5.2 Observed outcome on students

No significant main effect for time between the pre-test and post-test was found. A significant main effect for the experimental conditions was found, with F (1, 267) = 31.33, $p < .001$, partial $\eta^2 = .11$. No significant interaction between time and the two experimental conditions was found.

3.5.3 Teachers’ Self-Efficacy

No significant main effect for time between the pre-test and post-test was found. A significant main effect for the experimental conditions was found, with F (1, 316) = 6.81, $p < .01$, partial $\eta^2 = .02$. No significant interaction between time and the two experimental conditions was found.

Means and standard deviations for all teacher variables in the special school and primary

school sample are listed and potted in Table 8 and Figures 62 to73.

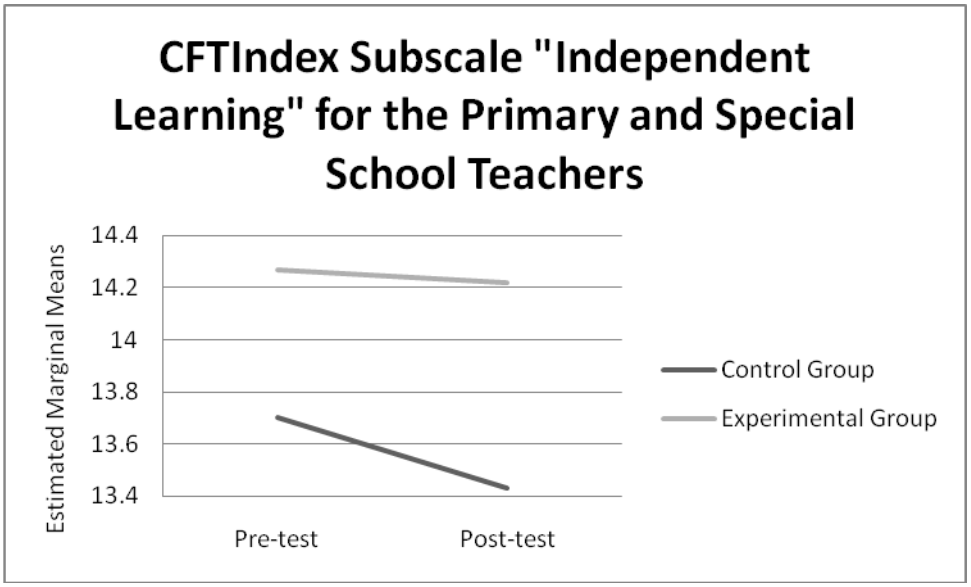

Figure 62.

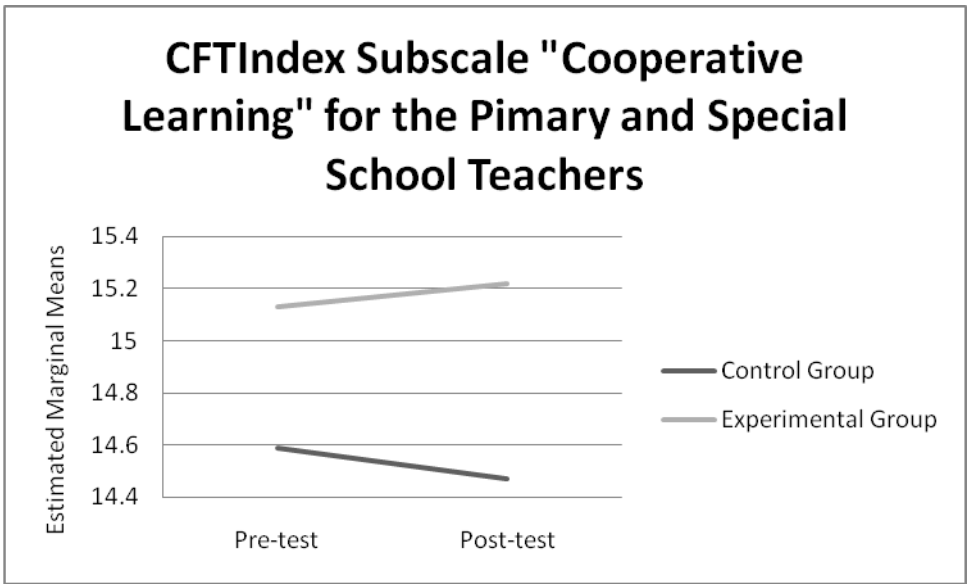

Figure 63.

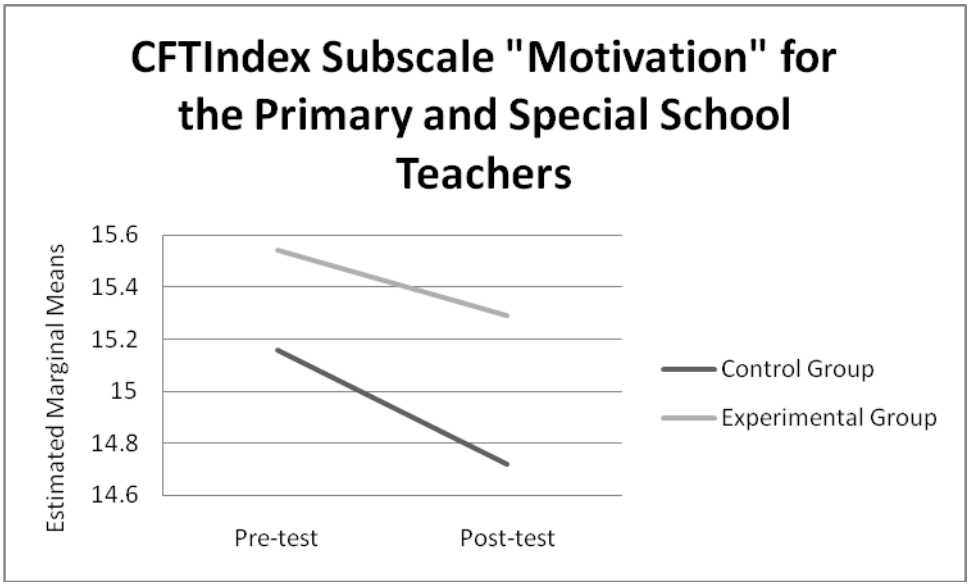

Figure 64.

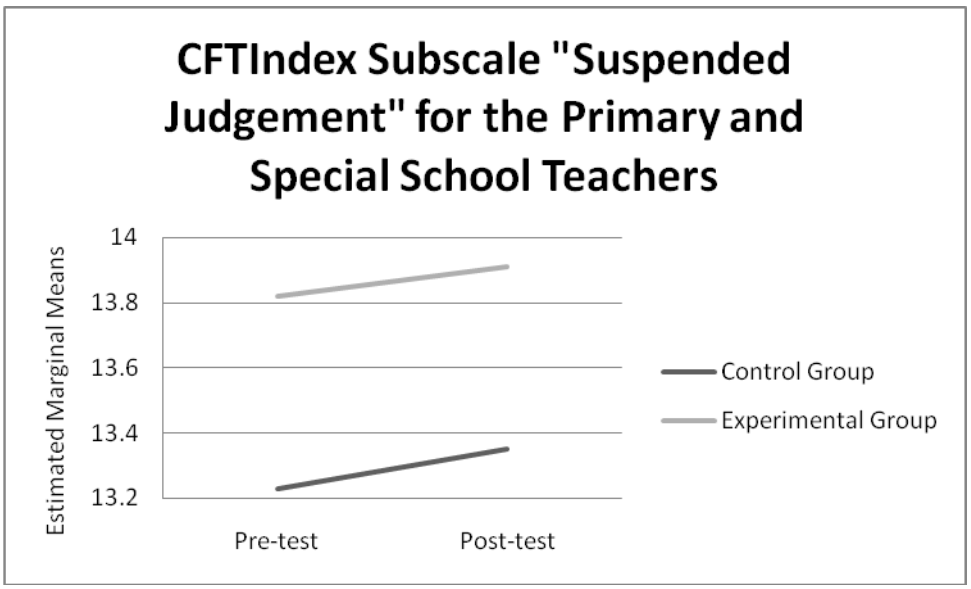

Figure 65.

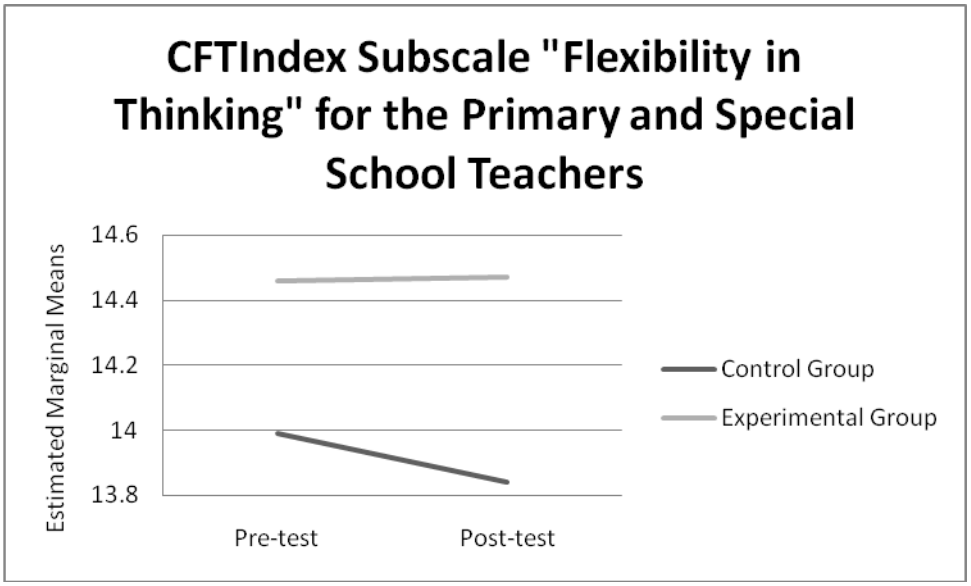

Figure 66.

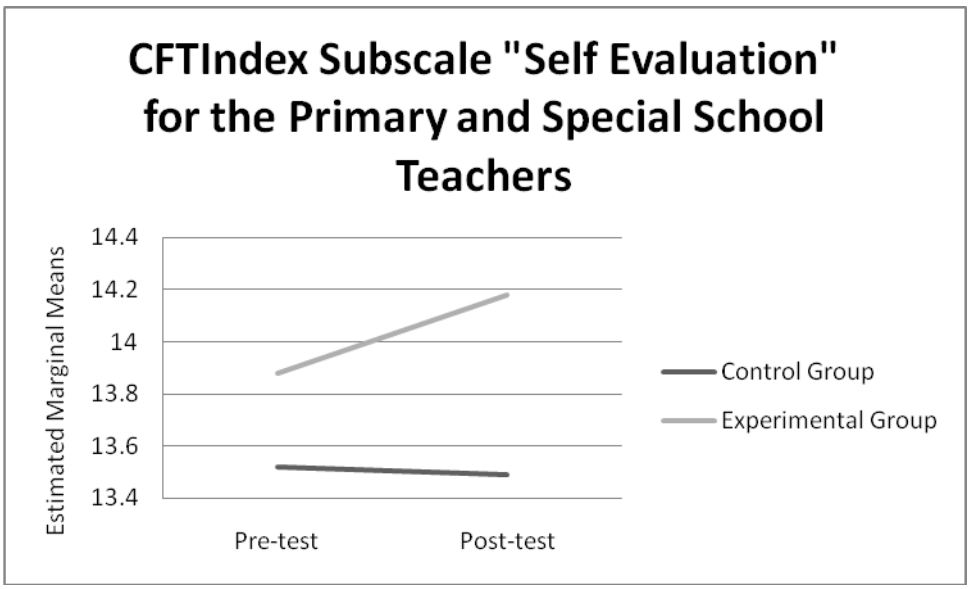

Figure 67.

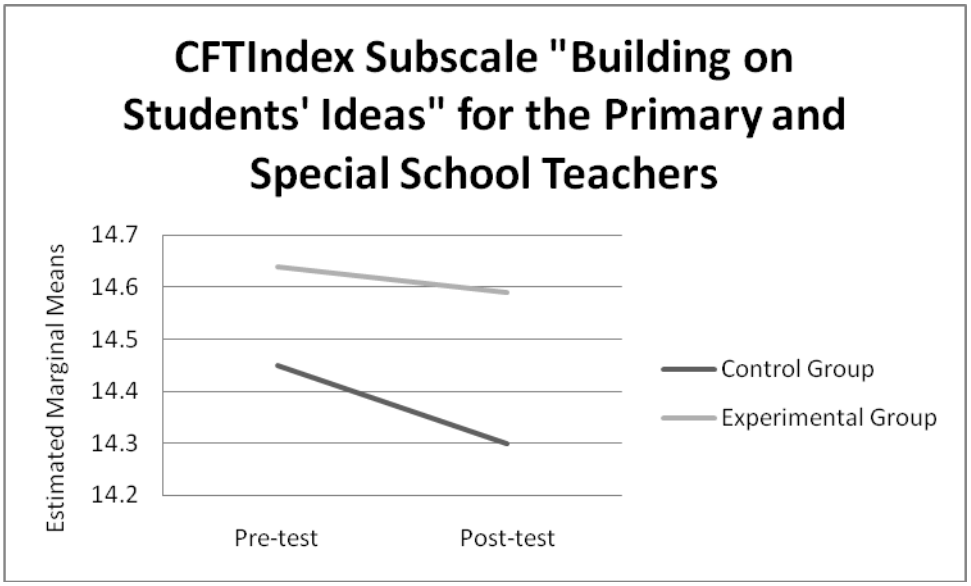

Figure 68.

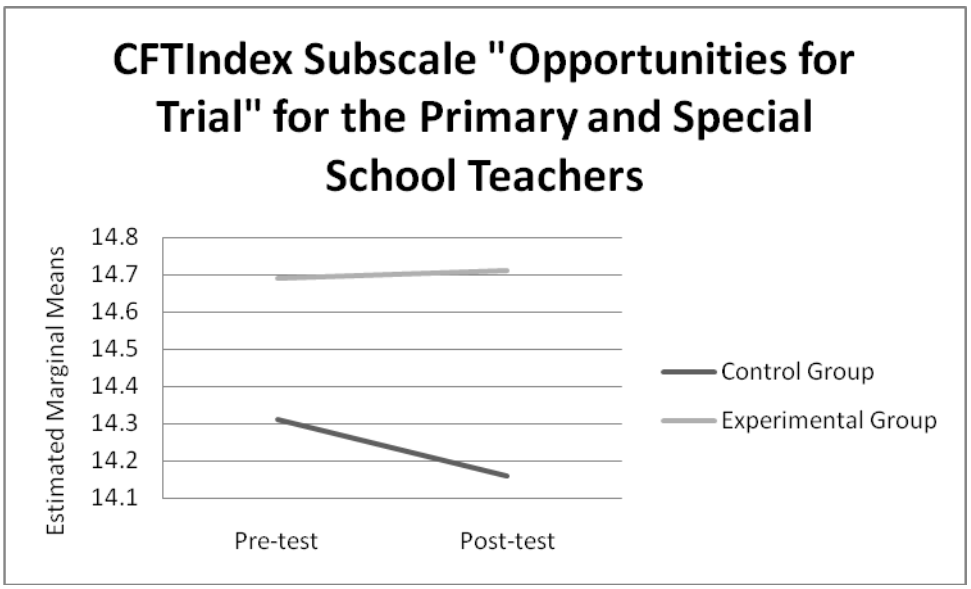

Figure 69.

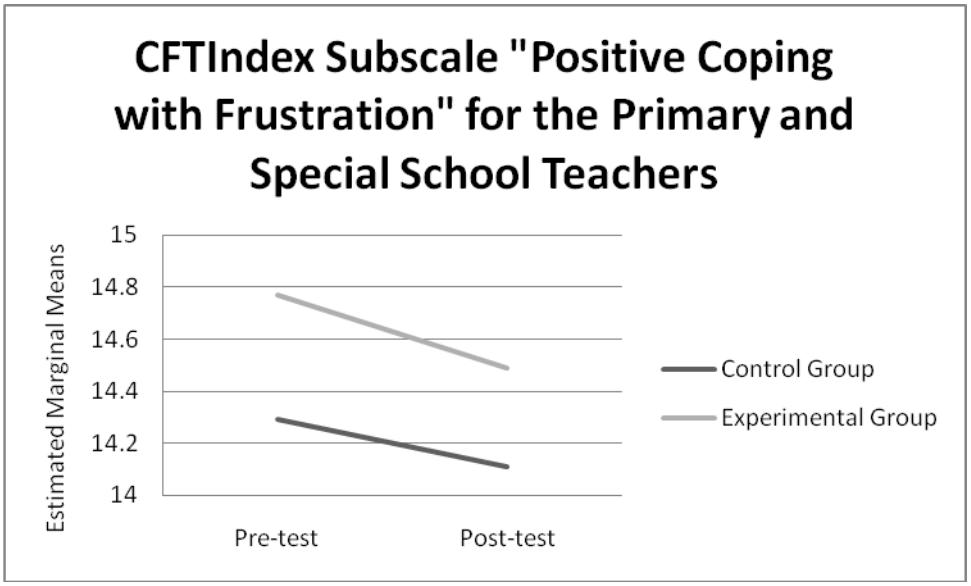

Figure 70.

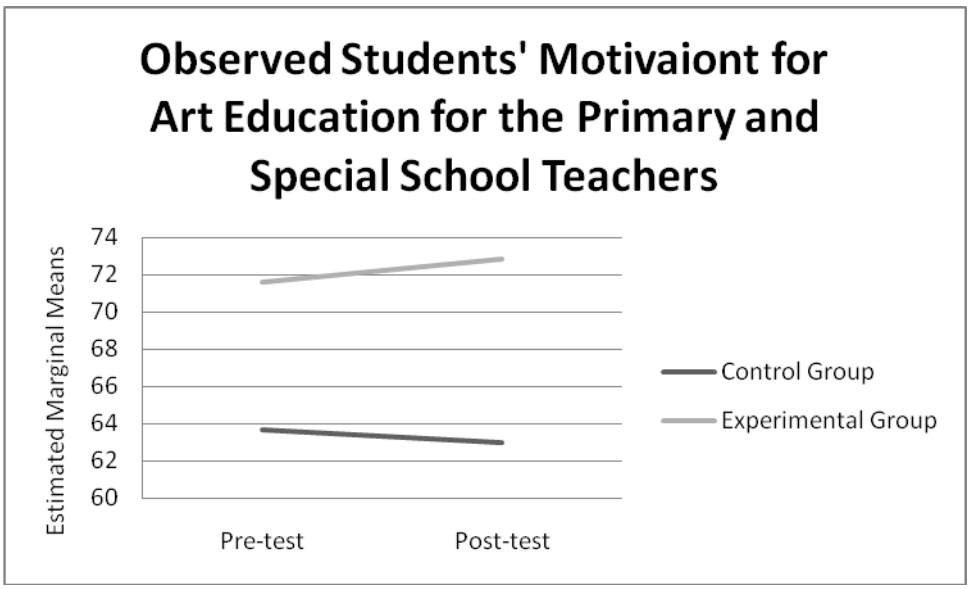

Figure 71.

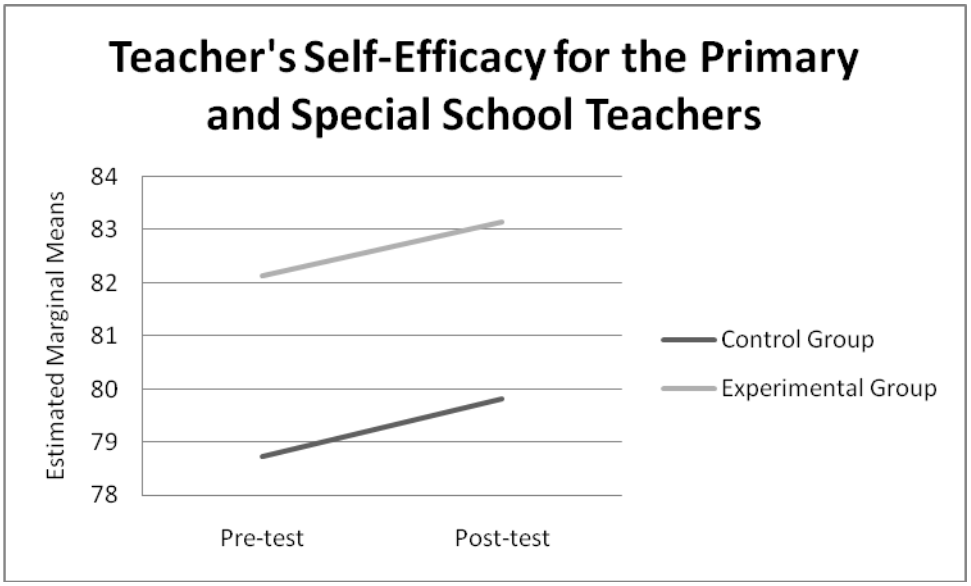
Teacher's Self-Efficacy for the Primary and Special School Teachers
Estimated Marginal Means
84
83
82
81
80
79
78
Pre-test
Post-test
Control Group
Experimental Group

Figure 72.

Table 8

Means and standard deviations of the CFTIndex Subscales, Observed Outcome on Students', and Teachers' Self-Efficacy for Primary and Special School Teachers. (N = 361)

	Pre-test				Post-Test			
	Control		Experimental		Control		Experimental	
CFTIndex (n = 142)								
IL*	13.70	(1.78)	14.27	(1.75)	13.43	(1.98)	14.22	(1.62)
CL*	14.59	(1.78)	15.13	(1.69)	14.47	(1.88)	15.22	(1.79)
MOV^{+}*	15.16	(1.88)	15.54	(1.50)	14.72	(2.27)	15.29	(1.86)
SJ*	13.23	(1.87)	13.82	(1.85)	13.35	(2.00)	13.91	(1.76)
FT*	13.99	(1.77)	14.46	(1.67)	13.84	(1.95)	14.47	(1.67)
SE*	13.52	(1.95)	13.88	(1.90)	13.49	(2.04)	14.18	(1.78)
BSI	14.45	(1.77)	14.64	(1.87)	14.30	(1.92)	14.59	(1.83)
OT*	14.31	(1.70)	14.69	(1.53)	14.16	(2.06)	14.71	(1.77)
PCF*	14.29	(1.82)	14.77	(1.58)	14.11	(1.98)	14.49	(1.79)
Observed Outcome* (n = 269)	63.68	(15.74)	71.60	(10.50)	63.02	(16.47)	72.85	(8.20)
Teachers' Self-Efficacy* (n = 318)	78.73	(10.99)	82.13	(11.44)	79.82	(12.52)	83.15	(10.09)

Note. $^{+}$main time effect, *main experimental effect, ^interaction effect. Standard deviations are put in parentheses.

4. Discussion

Integrating drama education into the formal school curriculum is a recent attempt in the educational reform in Hong Kong. Previous studies have shown that drama instruction has enhanced creativity performance in objective assessments and their communicative ability in story telling among Hong Kong primary school students (Hui & Lau, 2006; Hui, Wong,

Cheung & He, 2011), drama education was effective in raising verbal skills in students of various levels from different countries (Podlozny, 2000) and in learning geometry in mathematics in Turkish secondary school students (Duatepe-Paksu & Ubuz, 2009). Kindergarten and primary students and their teachers, as well as their counterparts in special schools taking part in the present study have been benefited from the drama instruction in different ways.

Kindergarten teachers have perceived that students in the experimental group have displayed more dramatic and creativity characteristics when compared with students in the control group. They are more willing to volunteer to participate in classroom plays or skits. They can tell a story at greater ease and use both verbal and body languages to communicate their feelings. They are also good at identifying themselves with the moods and motivations of the characters in reading stories. It is evident by the teachers that learning through drama is effective in enhancing empathetic understanding and verbal skills of kindergarten children. This finding is consistent with the meta-analysis conducted by Podlozny (2000) indicating that drama instruction enhanced oral language development of students of all population, including kindergarten children.

Primary school students who have received drama enhanced curriculum have reported significantly higher in all the outcome variables, including dramatic, creativity and communicative characteristics when compared with those who have not. They also scored

significantly higher in emphathetic concern and perspective taking. Drama education has enabled schoolchildren to develop emphathy and think from different perspectives. The finding is consistent with studies conducted by Hamamci and KÖ KSAL (2007) on university students' participation in creative drama and empathy. Drama education has enhanced an increase in the empathetic skills of the university students.

Similar patterns of gains were observed in students with special education needs. Teacher-rating on creativity and dramatic characteristics, positive emotion, emphathetic concern and perspective taking of students with special needs in drama enhanced classes have also made a more significant gain than their counterparts in the control group. Therefore, that personal development of individuals as an educational outcome of drama education was supported, regardless of intelligence and ability levels of students. Drama enhanced curriculum is also effective in enhancing the affective and personal development of students.

The performance in story telling task for kindergarten students who have taken part in drama education is significantly different from those in the control group. They speak more clearly and make story consistent with the theme. They provide a name to their stories and they improvise the emotion of the characters. But less consistent findings are yielded in the performance of story telling in primary school students. Students in the drama group have a better understanding of a structure of a story. They display higher creativity and problem identification characteristics than those in the control group. Improvements are also found in

students with special education needs. They tell story with higher clarity and are more confident to speak up. All the three groups of students in the experimental group have reported significant gains in the overall story telling scores in the post-test. Drama education is beneficial to typical students in the preschool and primary levels as well as students with special education needs.

Generally speaking, drama instruction in language classrooms has traditionally been an effective strategy (Wright, 2001). Drama provides a context for students to use the language spontaneously, serves as an effective medium to practice reflective thinking, as well as a strategy to enhance growth in understanding of abstract concepts and human experiences (Verriour, 2001). Morgan and Saxton (2001), and Bolton (1979) commented that drama provided "a different order of experience" for teachers to plan their curriculum in which thinking/feeling has become a major concern. Morgan and Saxton (2001) have further developed a taxonomy of personal engagement in learning through drama. The various processes include interest, engaging, committing, internalizing, demonstrating, and evaluating. Drama is an effective way to encourage students to be attending, displaying eye contacts, listening attentively and reacting with supportive non-verbal responses. It is a good way to engage students to participate actively, identify with the characters and gaining satisfaction through engagement. The third process of committing is requiring students to accept limits and responsibilities and emphathizing with the roles.

The drama instruction training offered to teachers by Ming Ri Institute of Arts Education aims at equipping teachers with knowledge and skills to be able to create drama with children in the classroom. They know and apply the teaching strategies and the form of drama. According to Wright (1984), teachers should be able to: "(1) form appropriate playable dramatic action for the group; (2) facilitate individual and group involvement in the drama; (3) guide individuals within the group towards understanding of the drama just created" (p.20). Teachers in the project adopt drama instruction in designing teaching and learning activities for students in their preschool and primary school curriculum in their language education.

Teachers participating in drama instruction have also demonstrated positive gains in their development towards a teacher fostering creativity. Drama instruction has encouraged kindergarten teachers to foster independent and cooperative learning among young children. It has also reminded teachers to build on preschoolers' ideas, provide opportunities for trials and enhance positive coping when frustrations occur in learning. Moreover, teachers have also provided supportive evidence by showing that students' motivation in learning and they have increased their teacher self efficacy through drama in education. Similar gains have also reported by teachers from primary schools and the special school. Drama in education training of teachers have enhanced the creativity fostering techniques as well as the overall teacher self-efficacy of teachers from different levels, including kindergartens, primary schools and special schools.

However, there are a couple of limitations of the present study. The first is on the generalizability of the findings to other preschool and primary school children and special learners in other school settings. The background of the participating kindergartens, primary schools and the special school are mainly for those institutions which are eager to take part in creative and drama projects. The teachers are willing and voluntary to attend drama training for their professional development. Their students are mainly from lower to middle income families. Their experience and exposure to drama and creative activities may influence the effect of the drama in education project. The second limitation is the lack of explanatory power of the transfer from drama learning to academic achievement. Future studies on how participants integrate their drama experience with their academic knowledge and with their social and interpersonal knowledge may be worthwhile pursuing.

References

Alencar, E. M. L. S. d. (2002). Mastering creativity for education in the 21st century. In *Proceedings of the 13th biennial world conference of the world council for gifted and talented children* Istanbul, Turkey.

Baron-Cohen, S., & Wheelwright, S. (2004). The empathy quotient: An investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *Journal of Autism and Developmental Disorders, 34,* 163–175.

Biggs,J. B. (1999). *Teaching for quality learning at university*. The society for research into higher education. Buckingham: Open University Press.

Boerner, S., Jobst, J., & Wiemann, M. (2010). Exploring the theatrical experience: Results From an empirical investigation. *Psychology of Aesthetics, Creativity & the Arts, 4* (3), 173-180.

Bolton, G. (1986). *Selected writing in drama education*. London: Longman.

Bolton, G. (2001). Changes in thinking about drama in education. *Theory into Practice, 24 (3),* 151-157.

Bryant, B. K. (1982). An index of empathy for children and adolescents. *Child Development, 53,* 413–415.

Bryce, J., Mendelovits, J., Beavis, A., McQueen, J., & Adams, I. (2004). *Evaluations of school-based arts programmes in Australian schools*. Australia: Department of

Education, Science & Training, Australian Government, Australia Council for the Arts, Department of Communications, Information Technology and the Arts, Australian Government.

Conard, F. (1992). The arts in education and a meta-analysis. *Dissertation Abstracts International, 53*(5-A), 1381

Courtney, R. (1990). *Drama and intelligence: A cognitive theory.* Montreal, Canada: McGill-Queen's University Press.

Curriculum Development Council (2002). *Arts education, key learning area curriculum guide (Primary 1 to Secondary 3)*. The Education Department, HKSAR.

Davies, D., Howe, A., Fasciato, M., & Rogers, M. (2004). How do trainee teachers understand creativity? In *Proceedings of the DATA international research conference: Creativity and innovation 2004*Wallesbourne, UK,

Duatepe-Paksu, A., Ubuz, B. (2009). Effects of drama-based geometry instruction on student achievement, attitudes, and thinking levels. *Journal of Educational Research, 102*(4), 272-286.

Freeman, G. D., Sullivan, K., & Fulton, C. R. (2003). Effects of creative drama on self-concept, social skills, and problem behavior. *Journal of Educational Research, 96 (3)*, 131-138.

Fryer, M., & Collings, J. (1991). Teachers' views about creativity. *British Journal of*

Educational Psychology, 61, 207–219.

Gardner, H. (1993). *Creating minds: An anatomy of creativity seen through the lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham and Gandhi*. NewYork: Basic Books

Goldstein, T.R. (2009). Psychological Perspectives on Acting *Psychology of Aesthetics, Creativity, and the Arts, 3*(1), 6–9

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology, 39,* 281–291.

Hamamci, Z., & Koksal, A. (2007). The effect of drama education on the level of emphathetic skills of university students. *Bulgarian Journal of Sciences and Education Policy, 1* (1), 205-215.

Howard-Jones, P. A., Winfield, M., & Crimmins, G. (2008). Co-constructing an understanding of creativity in drama education that draws on neuropsychological concepts. *Educational Research, 50* (2), 187-201.

Hui, A., Cheung, P. K., Wong, T. K., & He, M. (2011). How effective is a drama-enhanced curriculum doing to increase the creativity of preschool children and their teachers? *Journal of Drama and Theatre Education in Asia, 2* (1), 21-46.

Hui, A., & Lau, S. (2006). Drama education: A touch of the creative mind and communicative-expressive ability of elementary school children in Hong Kong. *Thinking Skills & Creativity, 1 (1),* 34-40.

Hui, A. N. N., & Lau, S. (2010). Formulation of policy and strategy in developing creativity education in four Asian Chinese societies: A policy analysis. *Journal of Creative Behavior, 44* (4), 215-235.

Jindal-Snape, D., & Vettraino, E. (2007). Drama techniques for the enhancement of social-emotional development in people with special needs: Review of research. *International Journal of Special Education, 22 (1),* 107-117.

Kardash, C. A. M. & Wright, L. (1986). Does creative drama benefit elementary school students? A meta-analysis. *Youth Theatre Journal, 1*(3), 11-18

Kampylis, P., Berki, E., Saariluoma, P. (2009) In-service and prospective teachers' conceptions of creativity. *Thinking Skills and Creativity, 4,* 15–29

Kitson, N., & Spiby, I. (1997). *Drama 7–11: Developing primary teaching skills, curriculum in primary practice.* London: Routledge.

Mack, R.W. (1987). Are methods of enhancing creativity being taught in teacher education programs as perceived by teacher educators and student teachers? *The Journal of Creative Behavior, 21*(1), 22–33.

Nettle, D. (2006). Psychological profiles of professional actors. *Personality and Individual Differences, 40,* 375–383.

Mooney, R. L. (1975). A conceptual model for integrating four approaches to the identification of creative talent. In C. W. Taylor & F. Barron (Eds.), *Scientific creativity:*

Its recognition and development (pp. 331-340). New York, NY: Robert E. Krieger.

Morgan, N., & Saxton, J. (2001). Working with drama: A different order of experience. *Theory into Practice, 24 (3),* 212-218

Piaget, J. (1959). *The language and thought of the child* (3rd ed.). London: Routledge.

Podlozny, A. (2000). Strengthening verbal skills through the use of classroom drama: A clear link. *Journal of Aesthetic Education* 34 (3/4), 239–275.

Rogers, C. R. (1983). *Freedom to learn for the 80's.* Columbus, OH: Merrill.

Roy, B. (2007). How community theater can enrich the life of a person with special needs. *The Exceptional Parent, 37 (12),* 32-33.

Soh, K. C. (2000). Indexing creativity fostering teacher behavior: A preliminary validation study. *Journal of Creative Behavior, 34* (2), 118-134.

Sternberg, R. J., & Lubart, T. I. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity*. New York, N. Y.: Free Press.

Sullivan, P., & McCarthy, J. (2009). An experiential account of the psychology of art. *Psychology of Aesthetics, Creativity and the Arts, 3* (3), 181-187.

Torrance, E. P. (1979). An instructional model for enhancing incubation. *Journal of Creative Behavior, 13 (1),* 23-35.

Torrance, E. P., & Safter, H. T. (1986). Are children becoming more creative? *Journal of Creative Behavior, 20,* 1–13.

Torrance, E. P. (1995). *Why fly? A philosophy of creativity.* Norwood, NJ: Ablex Publishing Corporate.

Wallas, G. (1926). *The art of thought*. New York, NY: Harcourt, Brace, Jovanovich.

Westby, E. L., & Dawson, V. L. (1995). Creativity: Asset of burden in the classroom? *Creativity Research Journal, 8*(1), 1–11.

Wilhelm, J. D. (1998). Not for wimps! Using drama to enrich the reading of young adult literature. *Alan Review, 25*(3), 36–40.

Winner, E., & Cooper, M. (2000). Mute those claims: No evidence (yet) for a causal link between arts study and academic achievement. *Journal of Aesthetic Education, 34 (3/4),* 11-75.

Verriour, P. (2001). Face to face: Negotiating meaning through drama. *Theory into Practice, 24 (3),* 181-186.