

Evaluation on
"Quality Thematic Network (QTN) on Drama in Education"
The Fifth Report (2012-2013)

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This fifth year report evaluated the effect of drama education on students and teachers from kindergartens, primary schools, secondary schools and two special schools who had taken part in the project entitled "Quality Thematic Network (QTN) on Drama in Education" (QEF) from Sept. 2012 to July 2013. 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 this fifth year, “Quality Thematic Network (QTN) on Drama in Education” (QEF) has continued to provide professional training on Drama in Education (DiE) to kindergarten and primary school teachers with an aim to strengthen teachers’ competency on facilitating students’ learning and development of creativity. The training has also been extended to secondary school teachers and students. The objective of this study was to evaluate the effectiveness of the implementation of DiE in enhancing creative teaching and learning in classrooms. A total of 80 schools (40 kindergartens, 30 primary schools, and 10 secondary schools) took part in the project. The student participants included 1366 students (858 in experimental classes and 508 in control classes). The teacher participants consisted of 235 teachers (175 teaching experimental classes and 60 teaching control classes). An increase in teacher-rated expressiveness in communication was observed in young children participating in the experimental classes in kindergartens. Secondary school students also reported an increment in their precision in communication. Teachers in the experimental classes had a significant gain in their creative self-efficacy. Discussion and limitations will be included.

中文摘要

「優質教育基金主題學校網絡：戲劇教育計劃(QTN)」已踏入第五年，繼續致力為幼稚園及小學老師提供專業戲劇教育培訓；希望藉著培訓來加強老師在促進學生學習及創造力發展的能力。今年，本計劃亦把培訓活動推廣至中學老師及學生。本研究的目的是為了評估於課堂實踐戲劇教育對優化創意教學的效能。參與本年度計劃之學校共有 80 間，當中包括 40 間幼稚園, 30 間小學及 10 間中學。在 80 間參與學校中，共有 1366 名學生參加者 (包括 858 名來自實驗組班別及 508 名來自控制組班別)。此外，參與本年度計劃之教師共有 235 人(包括 175 名來自實驗組班別及 60 名來自控制組班別)。研究結果發現戲劇教育提高了實驗組班別幼稚園學生參加者在溝通層面上運用的表達能力(由老師評價) 及中學生的溝通精準度，亦明顯增強了實驗組班別老師的創意自我效能。本報告亦討論是次研究結果的原因及限制。

1. Introduction

1.1 Creativity: What is it?

Through the years, research on creativity has been robust and has taken on diverse approaches towards examining the concept. Some of these earlier research attempts have focused on studying the relationships between creativity and intelligence, or theorizing and conceptualizing creativity, while others devoted to explore how creativity could be assessed and measured. The existing research effort has adequately provided grounds for ongoing creativity research to continue to discover the yet-to-be-explored area of the subject. To begin with, it would be helpful to first look at the definitions of creativity.

The definition of creativity has evolved from a superior ability happened to empower one to take on diverse views on a particular issue to the capacity in which one would be able to manufacture ideas that are distinct and unusual. Wilson, Guilford and Christensen (1953) attempted to illuminate creativity in terms of “originality”, one of the central aspects making up what creativity is. The notion has been broken down into three major components, namely “Uncommonness”, “Remoteness” and “Cleverness”. This could be a preceding insight for later conceptualization of the notion suggested by Guilford (1957) alone. Recognizing there could be qualitative variations in creativity between individuals of different professions, Guilford managed to identify three relatively general markers of creativity, including “Fluency”, “Flexibility” and “Originality”. Fluency basically refers to how capable one could generate an amount of productive outcomes; Flexibility would be related to the degree of diversity manifested by an idea; whereas, Originality is reflected by the uniqueness of the outcome produced. This framework has become one of the dominant dimensions used to measure creativity at later times.

A lot of other researchers have intended to bring closer the existing pool of definitions to modern application by putting forward conceptualizations and theoretical models that are more apt to capture creativity expressed in wider context. Amabile (1983) criticized on previous accounts having emphasized too much on personal determinants like personality and cognitive factors while most overlooked the role of social factors which may also potentially be impacting how creativity is manifested. She argued that creativity could be the sustainable outcome of an interactive system of personal and environmental variables, and brought up the need to consider how external stimuli may lower pre-existing confinement and at the same time stimulate one's internal incentive to foster creative expression. Likewise, Sternberg (1988) has developed a framework, called "Three-facet Model of Creativity", to account for the variations in creativity manifested by different individuals, through placing greater emphasis on intellectual influences and believing that discrepancies in creativity may be a matter of difference in disposition and level of motivation.

More recently, Kaufman and Beghetto (2009) put forward a new model linking up four types of creativity, including everyday creativity (also known as little-c), eminent creativity (also known as Big-C), personalized creativity (mini-c) and veteran creativity (Pro-c). These four types of creativity are believed to be developed at different points of time throughout one's life, from mini-c to little-c, then to Pro-c and finally Big-C. There are no fixed ranges of time or age in which a person might achieve any of the creativity types aforementioned and not everyone could or has the motivation towards developing Big-C, which was used to be experienced in one's later years. It is important to understand that mini-c played critical role in fostering the development of other types of creativity as it is the consequence of one's exploration and connection-making with the external world. Therefore,

the identification of such a categorization of creativity has rendered support to school educators to further promote creativity in conventional classrooms.

1.1.1 Verbal and Non-Verbal Creativity

A lot of previous literature has attempted to come up with measurement tools capable of objectively assessing a person's ability to express innovatively. Most of these efforts anchored on measuring innovativeness-related constructs, such as originality (Wilson, Guilford, & Christensen, 1953). Creativity has later started to become a stand-alone construct that has attracted effort attempting to find out how it should be measured. A number of instruments have been devised to assess the notion. Like any other aforementioned tools, these instruments have their items constructed in a way manageable to assess verbal and non-verbal expression of creativity. However, the boundary between verbal and non-verbal creativity manifestation has not been intentionally made clear-cut. Two creativity assessment instruments well-known for their applicability, including Wallach-Kogan Tests of Creativity (WKTC) (1965) and Torrance Tests of Creative Thinking (TTCT) (1966), were designed to capture both verbal and non-verbal aspects of one's creativity but were subsumed under one general measure of creativity. These instruments comprised tasks that required participants to manifest their creativity in words (verbal), e.g. naming of unusual or alternative uses of objects or identifying similar words in describing objects and in figures or pictures (non-verbal), e.g. making meaning out of given patterns and figures or produced a picture with stimuli given. The development of these tests has attracted further exploration on scales and questionnaires measuring verbal creativity, like Creativity Style Questionnaire (CSQ) (Kumar, Kemmler & Holman, 1997)

and other non-verbal tests, such as Tests for Creative Thinking – Drawing Production (Jellen & Urban, 1986), which contributed to broadening the understanding to the notion.

1.2 Importance of Creativity in School Learners

Past research has revealed a wide array of benefits creativity training brought to the personal development of young school learners and encouraged continuous research into the area. There have been reports on substantial improvements in personal factors, such as sociability, self-esteem (Mildrum, 2000) and emotional expressivity (Arnot, 2006), and enthusiasm (Dillon, 1995), experienced by individuals participating in creativity programmes. Given such evidences, it may be worthwhile to look deeper into how creativity may reinforce various other possible contributors to personal growth of young school learners.

1.2.1 Empathy

In more general understanding, empathy could be interpreted as one's ability to put oneself into others' shoes. For young school learners, when they managed to accurately perceive others' feelings, they are said to be empathic (Adams, Summers & Christopherson, 1993). This capability of feeling for others could be imperative to school learners' interpersonal relationship development (Roberts & Strayer, 1996) and psycho-social well-being (Webster-Stratton & Reid, 2003). As empathy is of considerable eminence to the personal growth of school learners, some studies set forth to examine the relationship between creativity and empathy. A study conducted by Carlozzi, Bull, Eells and Hurlburt (1995) generated findings that affirmed the positive association between the two variables in tertiary-level learners, by suggesting that school learners' creativity seemed to be fairly predictive of empathy. Other studies also suggested that creativity and

empathy could be in a mutually reinforcing position under pedagogical context. Learning to achieve the abilities could take place in either way; it could be that being able to take perspectives of others can help young school learners to develop creativity via interactive play among their fellows (Honig, 2000), or in the other way round, empathy could be fostered at the same time through activities that help cultivating learners' creativity (Webster, 2010).

1.2.2 Communication

Enhancing school learners' communicative and expressive abilities could be one of the key teaching objectives of school educators nowadays. There have been, in the past, relatively scant effort made to study the possible interaction between creativity and communicativeness (Peressini, 1995; Hui & Lau, 2006). Jaben (1987) has put forward a study to investigate the impact of a creative programme could have on learners' verbal expressivity. Statistical evidences have shown significant enhancement in "Fluency" and "Flexibility" of responses produced by participants in Torrance Tests of Creative Thinking, reflecting the fact that they were able to express more ideas and with greater and better details after receiving the programme. Adding to this finding was another literature recently published by Guillén and Bermejo (2011). In their study, a student writing project embedded with a series of art- and music-centred creativity-stimulating activities served as an intervention to enhance learners' verbal expressiveness. By having learners actively participated in these creativity-activating activities, assimilation of language composites have been made easier, allowing them to demonstrate greater competence towards acquiring and using new lexical items and language structure to

manifest their ideas verbally. After all, these studies have provided preliminary evidence for further discussion and exploration on the relationship.

1.2.3 Motivation

Motivation may be an important factor that helps maintaining young school learners' effort towards achieving high academically (Gottfried, 1990). Moneta and Siu (2002) have put forward a discussion on the connection between trait motivation, creativity and school performances of school learners in Hong Kong. It was observed in the statistical findings that intrinsic trait motivation tended to be more relevant to and predictive of learners' creativity in terms of originality of their responses. However, the role of extrinsic motivation in fostering learners' creativity shall never be understated. Putwain, Kearsley and Symes (2012) have also studied how high school learners' self-assessed creativity could be related to their motivation towards learning. It was reported that their self-assessed creativity was associated with both intrinsic and extrinsic motivation in positive manners and statistically significant outcomes generated from hierarchical regression also supported that extrinsic motivation was far more predictive of learners' creativity than was intrinsic motivation. In face of these existing research evidences, it might be difficult to say whether intrinsic or extrinsic motivation played a more influential part in accounting for learners' creativity; what were more seemingly clear could be their possible impact on different aspects of creativity. This rather elusive relationship still awaited further elucidation.

1.3 Self-Efficacy on Creativity: Teachers and Learners

There has been literature casting light on how creative self-efficacy may be related to creative performances of learners (Robbins & Kegley, 2010; Karwowski, 2011). It could be an aspect worthy of studying and for school educators to consider while designing a curriculum aiming at bolstering young children's creative expression.

1.3.1 Teachers

The extent to which teachers conceived themselves as competent creative nurturer could have an impact on learners' creative expression (Cremin, 2006). Chan's (2008) study gave statistically significant evidence showing moderately strong positive correlation between teachers' self-perceived creative capacity and their confidence in delivering classes that encouraged creative learning in students; which means the more creative one perceived he/she is as a teacher, the more confidence he/she could have in unleashing learners' creativity.

Apart from Hong Kong, educators from other parts of the world were also facing problems related to their confidence in maintaining a creative learning environment for their students. Most of these teachers did recognize fostering creativity development in students as part of their teaching responsibilities but without sufficient resources and hands-on learning support, many believed they were not well-equipped to teach in a way that help cultivating students' creativity (Kampylis, Berki & Saariluoma, 2009). Recent research has revealed increasing needs to enhance both prospective and in-service school teachers' creative-teaching efficacies via theoretical and practical training programmes and this could be the first step towards providing creative schooling which may be of

substantial intellectual betterment to the young (Russell-Bowie, 2012; Uzakbaeva, Baimukhanbetov, Berkimbaev, Mukhamedzhanov, & Pralieva, 2013).

1.3.2 Students

Creative self-efficacy (CSE) of students is linked to creative manifestation and academic development, as have been reported in a number of research studies. Beghetto (2006) intended to look into the relationships among various variables, including CSE, academic efficacy and after-class activities of high school students. Statistical outcomes generated from data analysis suggested that school learners with higher CSE were comparatively more likely to be optimistic about their ability to excel in certain academic subjects and actively participate in activities outside regular school time. On top of its positive relationships with self-perceived academic ability and extra-curricular learning, CSE was also correlated with creative expression of school learners. Beghetto, Kaufman and Baxter's (2011) study pointed out that it could be detrimental to learners' creative manifestation if they have low CSE. Therefore, this raises school educators' attention in the urge to develop educational programmes or initiatives that specialized in facilitating school learners' CSE. Programmes intended to foster learners' creativity have found to be effective in boosting their CSE, which may in turn affect how creative behaviour would be maintained. In Mathisen and Bronnick's (2009) study, students enrolled in a five-day creativity course have reported far greater CSE than those in regular math and statistics course upon completion. Their CSE was also measured two months after completing the course. Despite no further increment but a slight drop in CSE has been recorded, the significant changes in CSE reported throughout the intervention sufficiently supported that these programmes effectively built up learners' confidence to express creatively.

Success of regional education initiatives in heightening and maintaining Singaporean students' CSE have been implied in a study undertaken by Tan, Ho and Yong (2007).

1.4 Why Creative Teaching Strategies Matter?

Having positive belief and confidence towards manipulating a creative learning environment was far from enough to lifting school learners' creative performances. Teachers have to put such educational expectations into action in order to realize the fruitful intellectual outcomes on learners. This was why creative teaching strategies needed to come into play. Successful implementation of these teaching strategies required school educators' careful planning, openness and motivation towards making it happened (Simplicio, 2000). Horng, Hong, ChanLin, Chang and Chu (2005) provided in their study some empirically-affirmed creative pedagogical strategies that have been effectively practiced by school educators in Taiwan. Most of these strategies encouraged more autonomy and proactivity from learners and intended to help them bridge their knowledge with everyday application. School educators, playing the role more as a facilitator than solely an instructor, could have adopted a variety of creative instructional techniques to cultivate learners' enthusiasm towards learning and exploring, imaginative power, communicativeness and novel thinking ability. These included extensive use of open-ended questions, collaborative learning activities, different content delivery tools and relevant personal experiences. It was also reported that withholding judgment was imperative to the effectiveness of such strategies as it contributed to creating an unbiased, stress-free and creativity-fostering ambience for learners to develop their intellectual skills. In a latest study, Dziedziewicz, Oledzka and Karwowski (2013) made use of picture books as a creative teaching strategy to enhance learners' thinking skills and creative expression. Participated preschoolers were found to experience intellectual

improvements after going through the intervention. Their responses showed higher tendency in demonstrating their imagination and creativity, characterized by stronger ideational fluency and originality.

1.5 Assessment Tool in Demand: Evaluating Creative Learning Milestone

As more and more research attention has been devoted to study creativity-related educational amelioration, how these progresses could have been objectively measured becomes a necessary question to consider. With previous research contribution, a lot of instruments assessing individuals' creative expression and disposition, for example, TTCT and CSQ, and teachers' competence in creative teaching, such as Inventory of Self-Efficacy for Creative Teaching (ISECT) (Lin & Chiou, 2008) have been developed. Nonetheless, the current pedagogical context still lacks an effective tool which enabled school educators to evaluate and reflect on how competently they have achieved the creative teaching objectives initially laid down.

Reviewing previous literature on pedagogical objectives evaluation, it was a common attempt for scholars to adapt the rationale of Bloom's Taxonomy to construct an instrument dedicated to assess the extent to which educational goals were achieved. Bloom's Taxonomy is a theoretical model developed by Bloom, Englehart, Furst, Hill and Krathwohl (1956) to provide a systematic platform for educational professionals to define educational issues and targets meticulously, enabling them to organize and assess their teaching experiences that may lead to future educational success. This relatively well-established work has encouraged further manipulation by later researchers to serve the purpose of keeping an eye on current educational progress and improvement. There were evidences showing that the it has been made a reference for curriculum designing and planning (McNeil, 2011), a comparable

ground for educators to be well-informed about how well they were able to help learners master class content and achieve the intended learning outcomes (Rupani & Bhutto, 2011) and a measure of course effectiveness that helped locating factors influencing learning outcomes (Halawi, McCarthy, & Pires, 2009).

1.6 Fostering Creative Learning: Drama Pedagogy or Drama in Education (DiE)

From time to time, reforming educational curriculum to deliver progressing and stimulating learning experiences has been one of the top concerns of regional policy revision agenda. It is apparent that a number of nations have attempted to introduce and incorporated a variety of new elements into the curriculum to yield more impressive educational outcomes. Creativity is undoubtedly one of these components, as it has been linked to a considerable amount of psychosocial and academic benefits mentioned earlier.

To effectively promote creativity development in school learners, many have proposed to use drama and other art forms as means to achieve this objective. Lines of research have been conducted to examine their effectiveness towards boosting learners' creativity and results often suggested that drama pedagogy could be helpful in enhancing their creative thinking and expression ability (Nicholas & Ng, 2008). Drama pedagogy or drama in education (DiE) was a seemingly a more well-practiced strategy adopted in tertiary education than in any other educational level. However, in the past two decades, there have been scholastic evidences showing that DiE has begun to be tested for implementation in preschool, primary and secondary school curriculum. Yeh and Li (2008) reported that drama pedagogy could positively affect preschoolers' creativity when the use of DiE was being more extensively and intensively promoted within the kindergarten. Under such creativity-encouraging environment, pre-schoolers were more capable of producing novel and useful

expressions. Similar relationship was also found in primary school learners' and DiE was also discovered to be associated with higher learning motive and behavioural expression (Sefer, 1995). Likewise, there was also a body of research intended to explore how drama pedagogy could be implemented and maintained in secondary school classrooms. DiE was believed to be helpful in facilitating learners' creative expression (Hui, Cheung, Wong, & He, 2011) and also language mastery (To, Chan, Lam, & Tsang, 2011). Further research has also supported that DiE might not only be able to foster secondary school learners' creative manifestation but also raise their learning motives (Hanley, 1995; Darlington, 2010) and perspective-taking ability (Yassa, 2010), refurbishing them into active and enthusiastic individuals better-prepared for learning.

Recognizing the diverse impacts drama pedagogy could bring to school learners, a lot of Asian countries have reformed their education curricula in support of creative pedagogical strategies. Despite learning the fact that implementing DiE in Asian regions could be difficult (Lin, 2010), educators from Taiwan and Hong Kong have never lost hope in examining the effectiveness of drama pedagogy on enhancing school learners' personal and academic development. With reference to Lin's (2010) review, drama has been introduced to nationwide preschool, primary and secondary education curriculum since 2001 and creativity-promoting initiatives like creative partnership have been undertaken to help school learners improve their creative expression through activities designed and delivered hand-in-hand by educational institutions and local Arts organizations. Similarly, educational institutions in Hong Kong have also closely followed in Taiwan's footsteps, gradually trying to implement drama-oriented pedagogical approaches in the current academic curriculum, with an aim to optimize school learners' academic and personal development. Since 2000, a lot of

government-supported research projects have been designed to provide insights on the feasibility and effectiveness of employing DiE under local educational context (Education Bureau, 2010; Quality Education Fund, 2013), including the present study, which is supported by the Quality Education Fund.

Over the past four years, encouraging research findings have been achieved regarding how much positive impact DiE is capable of bringing to school learners' psycho-social and teachers' pedagogical development (Hui, Lee, & Choi, 2010, 2011). In general, results of the previous research reports have suggested that DiE training for teachers and its implementation in classrooms may actually have given rise to the high level of dramatic and creativity characteristics exhibited by school learners and teachers' tendency towards making an effort in fostering creativity in class across different levels. Progresses have also been observed in learners' verbal creativity, as demonstrated by the higher ratings reported in the Story Telling Test. Under the influence of DiE, pre-schoolers were more apt to express relevant, clearer and comprehensive ideas; primary school learners were more able to produce better-structured, precise and appropriate ideas; while special school learners also became more manageable in generating audible and theme-relevant ideas during the time they were asked to generate a story. There were also other evidences revealing that DiE may possibly have the capacity to foster primary and special education school learners' empathic responses and motivation towards learning through the Arts of the former. Whereas for teachers, consistent levelling up in their propensity towards maintaining a creative learning atmosphere for school learners has been realized in studies being carried out in the past several years. Even though teachers may have the motivation in making various contribution towards enhancing school learners' creativity, it was also found that teachers' self-efficacy may have certain implications

pertinent to enhancing learners' creativity and the extent to which a teacher conceived he or she would be able to manipulate instructional strategy may as well cast positive effects on learners' expressiveness.

Providing that existing research evidences showed affirmative interaction between DiE and learners' verbal creativity and also teachers' self-perceived capacity to foster learners' creativity, these altogether set the stage for the present study to take a deeper look into how confidently teachers were able to teach with creative pedagogy, how positive teachers' expectation towards DiE and the effect DiE training had on their pedagogical practices may help foster school learners' verbal and perhaps non-verbal creative manifestation.

1.7 Objectives of the present study

The present study was designed to examine the effectiveness in creative learning and creative teaching in young children, primary and secondary students, and their teachers after participating in a DiE project for a school year.

Methods

2.1 Participants

This research was designed as a pre and post-test quasi-experimental design with an aim to examine teachers' effectiveness on implementing DiE techniques to achieve their teaching objectives and students' enhancement of their creative potentials. There was a total of 80 school (40 kindergartens, 30 primary school, and 10 secondary school) took part in the project.

The first part is a quantitative study for students. Convenience sampling was used. A total of 1680 students (include 838 male and 831 female) participated in the pretest, but only 1366 students competed the pretest. The experimental group had 858 students and 508 students took part in control group. Pre-test was held before using DiE Lesson (from 10/2012 to 01/2013), and the post-test was held after using DiE Lesson (from 03/2013 to 06/2013). The time duration between Pre-Posttest was about 4 months.

The second part is a quantitative study for QTN teachers. Snowball sampling was used. There are a total of 448 teachers (61 male and 384 female) participated in the pretest, but only 235 of them competed the posttest. 175 of experimental teachers were invited to fill in a pretest questionnaire before they had the DiE workshop in Sept. and Oct., 2012 and 60 of control teacher who did not join any DiE workshop before was invited by the experimental teachers from Oct. 2012 to Jan. 2013. Posttest was held in May 2013 for both groups of teacher participants. All the experimental teachers completed 2 sessions of 4 hours training (a total of 8 hours) focusing on DiE strategies. The first workshop was held on Sept. and Oct., 2012 and the second workshop was held on Jan. and Feb. 2013. In both of their school terms, they had to design and delivered a unit of drama-enhanced curriculum in their class. Before

the delivery, a teaching artist specialized in both DiE and the targeted academic subjects (such as Chinese language or English language) conducted collaborative lesson planning with the teachers. The class delivery was also observed and comments were given by the teaching artists.

2.2 Instruments

2.2.2 Students

Story Telling Test (STT; Hui & Lau, 2006)

The STT was conducted by an experienced researcher and trained research assistants who disguised her(him)self 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. In this test, student participants were provided 3 minutes for preview and 5 minutes to create their story. They were allowed to continue until they indicated the completion. The storytelling process was digital-recorded and then evaluated by two raters independently in accordance to 13 criteria: 1) relevancy to the story, 2) ability to describe the story, 3) ability to organize the story, 4) ability to express, 5) ability to show emotions or 6) speak in an audible tone, 7) ability to add in conversations, 8) ability to include humorous elements, 9) ability to include creative elements, 10) ability to identify problems and find relevant solutions, 11) ability to naming the story, 12) ability to make story by themselves and 13) ability to use vocabulary. Each criterion was rated on a five-point scale (from 0, lowest, to 4, highest).

Each Story was rated by two trained researchers. Positive correlations between the composite scores calculated by the two markers for the pre-test ($r = .73, p < .01$) and post-test ($r = .75, p < .01$) were obtained, indicating a good inter-rater reliability.

The Test for Creative Thinking - Drawing Production (TCT-DP)

The TCT-DP (Urban & Jellen, 1996) was used to examine students' creative potential. The test aims to assess participants' creativity in terms of quantity, i.e. fluency of ideas, and quality, such as content, gestalt, composition, and elaboration, together with other components, such as risk taking and breaking of boundaries, unconventionality, affection, and humour (Urban, 2005; Urban & Jellen, 1996). The instrument is applicable in single or group testing with persons between 5 and 95 years of age; and it is suitable for examining effects of training and learning as a pre- and post-test (Urban & Jellen, 1996).

The test was available in two forms A and B and were used in the pre-test and post-test respectively. Both forms consist of 6 figural fragments, a Semi-circle, a Point, a Large Right Angle, a Curved Line, a Broken Line, and a Small Open Square outside the Large Square Frame. Fragments for the two forms were the same but different in positioning. Participants were told to complete the drawing freely without any restrictions. Title was told to be given if there was any. Generally, there was no time limit for this test but notice would be given by administrator after 15 minutes had passed. Creative performance was scored by using 13 criteria (i.e., Continuations (Cn), Completion (Cm), New elements (Ne), Connections made with a line (Cl), Connections made to produce a theme (Cth), Boundary breaking being fragment-dependent (Bfd), Boundary breaking being fragment-independent (Bfi), Perspective (Pe), Humor and affectivity (Hu), and Unconventionality A/B/C/D (Uca/b/c/d)) while the 14th criterion, Speed (Sp), was not included in the current study. A composite score was obtained by summing the points scored on each of the above-mentioned

criteria with no transformation. The total possible score range of TCT-DP is 0-66 points; a higher score indicates better creativity.

Each drawing production was rated by two trained researchers. High positive correlations between the composite scores calculated by the two raters for the pre-test ($r = .74$, $p < .01$) and post-test ($r = .81$, $p < .01$) were obtained, indicating a good inter-rater reliability.

SRBCSS

Items adapted from Renzulli, Smith, White, Callahan and Hartmann (1976) Scales for Rating the Behavioral Characteristics of Superior Students (SRBCSS), were used to assess students' 1) Communication Characteristics and learning motivation. There were 15 items in the Communication Characteristics subscale (11 items of precision communications and 4 items of expressiveness communication) and 11 items in learning motivation subscale. Items were rated using a 6-point Likert-scale (from 1 = never to 6 = always). The questionnaire was administered twice to compare the pre- and post-test scores.

The reliability of the subscales as indicated by the Cronbach's alphas were .79~.93, in the pre-test were .81~.92 and in the post-test were .79 ~ .93, indicating that there was a good reliability of each subscale.

Basic Empathy Scale (BES)

The original scale was adopted by Jolliffe, Farrington (2006) and translated into Chinese by Li, Lv, Liu, and Zhong (2011). The Basic Empathy Scale was used to assess students' cognitive empathy and affective empathy. There were 11 items in the cognitive empathy subscale, and 9 items in the affective empathy. Items were rated using 5-points likert scale

(from 1 = strongly disagree to 5 = strongly agree). The questionnaire was administered twice to compare the pre- and post-test scores.

The reliability of the subscales as indicated by the Cronbach's alpha were .71 ~ .82, in the pre-test were .79 and .72 respectively, in the post-test were .82 and .71 respectively, showing that there was a good reliability of each subscales.

Self-Assessment Rubric of Creative behavior

The scale was developed by Kousoulas (2010). The construction of the rubric was based partly on theoretical features of creative behavior. Cognitive, emotional, social, and personal characteristics have been explored as indicators of creative behavior by students during the learning process. Items were rated using 4 points rubric. The questionnaire was administered twice to compare the pre- and post-test scores.

The reliability of the scale in pre-test as indicated by the Cronbach's alpha was .73, and post-test was .75, showing that there was a good reliability of each subscale.

Kindergarten students completed only the drawing task and story-telling task. The questionnaire was filled in by their teachers. Primary and secondary school students finished the drawing task, story-telling task, and questionnaire by themselves.

2.2.1 Teachers Questionnaire

Creative self-efficacy:

Thirteen items of Yang and Cheng's (2009) Scale of Creative Self-Efficacy were adapted with a high reliability ($\alpha = .91$). Items were rated using a 5-point Likert scale (from 1 =

strongly disagree to 5 = strongly agree). Sample items included: “the belief that I would suggest new ways to achieve goal or objectives, the belief that I would exhibit creativity on the job when given the opportunity to.” The reliability of the scale in pre-test as indicated by the Cronbach’s alpha was .92, and post-test was .91, showing that there was a good reliability of the scale.

Self-efficacy of creative teaching

Fifteen items of Self-efficacy of creative teaching was adapted by Lin and Chiou (2008) with a high reliability ($\alpha = .74 \sim .92$). It was designed to measure three self-efficacy of creative teaching: positive affirmation, negative awareness, resilience belief. Respondents were required to rate the extent to which they agreed with different statements about self-efficacy of creative teaching on a likert-7 point scale (from 1 = strongly disagree to 7 = strong agree). The reliability of the scale in pre-test as indicated by the Cronbach’s alpha was .67 ~ .91, and post-test was .74 ~ .90, showing that there was a good reliability of each subscale.

Teachers’ expectation on DiE

It was developed by adapting from Bolin, Khramtsova and Saarnio (2005). The original scale was to measure the university students’ affective outcome, evaluation of course outcomes, cognitive journal outcomes and course expectations on journal writing. Only 12 items from the original scales was adapted by rephrasing “journal writing” and “this class” to “drama in education”. Items were rated on a 5-point Likert-scale (from 1 = very disagree to 5 = very agree). The reliability of the scale in pre-test as indicated by the Cronbach’s alpha was .91, and post-test was .90, showing that there was a good reliability of the scale.

All experimental teachers completed the questionnaire before the workshops in Oct. 2012. All teachers in the control group were invited to fill in the questionnaire before Jan. 2013. And all teachers filled in the posttest questionnaire in June and July 2013.

Results

3.1 Students

Repeated measure of multiple analysis of variance was conducted to test the differences between two different independent variables the experimental group ($N = 858$); control group ($N = 508$) from three levels of school (kindergarten, primary and secondary school) at two different points of time (Pre-test, Post-test) on the 8 variables (Table 1).

As there was no significant on three ways MANOVA (Table 2), Time X Group X Different school level, $F(16, 2708) = 1.513, p = .086, \eta^2 = .009$, the results of different school levels were presented separately.

3.1.1 Kindergarten Students

Two ways MANOVA (Table 3) was conducted to test the differences between the independent variable experimental group ($N = 406$); control group ($N = 143$) and different time (Pre-test, Post-test) on the 8 variables of the kindergarten students.

Table 1

Means and Standard Deviations of the testing variables at the pretest and post-test

	Experimental				Control			
	Pre		Post		Pre		Post	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Kindergarten								
Precision	4.08	0.92	4.45	0.84	3.97	0.95	4.31	0.82
Expressiveness	3.69	1.05	4.10	0.95	3.43	1.04	4.05	0.89
Learning motivation	4.26	0.84	4.52	0.80	4.14	0.94	4.31	0.85
Cognitive empathy	3.22	0.59	3.28	0.59	3.20	0.59	3.27	0.58
Affective empathy	3.67	0.46	3.76	0.42	3.60	0.48	3.66	0.48
Self-assessed creativity	2.65	0.66	2.81	0.66	2.63	0.68	2.66	0.63
TCTDP	9.63	5.90	13.07	6.69	9.64	5.41	13.87	6.19
STT	16.51	5.04	18.91	4.60	17.83	4.80	20.07	4.14
Primary School								
Precision	4.25	0.89	4.33	0.89	4.20	0.83	4.29	0.81
Expressiveness	3.95	1.18	4.09	1.07	3.95	1.08	4.06	0.93
Learning motivation	4.42	0.93	4.51	0.91	4.35	0.94	4.45	0.82
Cognitive empathy	3.20	0.69	3.16	0.76	3.22	0.71	3.24	0.71
Affective empathy	3.70	0.71	3.76	0.72	3.76	0.71	3.77	0.67
Self-assessed creativity	2.99	0.53	3.04	0.53	2.92	0.52	2.97	0.55
TCTDP	16.97	7.25	13.91	5.45	15.27	6.22	13.47	5.22
STT	24.25	5.82	24.97	5.14	22.43	5.43	23.92	5.20
Secondary School								
Precision	4.05	0.69	4.16	0.85	4.11	0.53	3.95	0.89
Expressiveness	3.78	0.85	3.86	1.00	3.78	0.82	3.60	0.97
Learning motivation	4.26	0.75	4.41	0.70	4.10	0.69	4.22	0.59
Cognitive empathy	3.39	0.60	3.36	0.68	3.30	0.59	3.26	0.61
Affective empathy	3.89	0.59	3.83	0.64	3.75	0.48	3.67	0.60
Self-assessed creativity	2.80	0.60	2.81	0.61	2.74	0.62	2.65	0.65
TCTDP	16.91	6.28	14.83	6.30	16.15	6.45	15.94	6.61
STT	20.36	4.93	21.24	6.02	20.34	4.90	20.51	6.61

Table 2

Different group, different school type and different time on students ability's ANOVA table

	<i>F</i>	Sig.	η^2
Between Subjects			
Group	1.42	.184	.008
Within Subjects			
Time	12.02***	.000	.066
Time x Group	2.16*	.028	.013
Time x School Level	16.49***	.000	.089
Time x Group x School Level	1.51	.086	.009

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

The results showed that there was an interaction effect between time and different groups of students, $F(8, 540) = 3.22$, $p = .001$, $\eta^2 = .045$, which was found in expressiveness communications and self-assessed creativity, $F(1, 547) = 5.04$, 4.99 , $p < .05$. It was suggested that the expressiveness communication and self-assessed creativity of different group of students differed in time. The expressiveness communications simple main effects of group and Pre-test were significant (Table 4), $F(1, 588) = 7.32 \sim 90.66$, $p < .05$. The experimental group and control group students' expressiveness in communication improved as the time passed, but the control group will improve better than the experimental group which leveled off the group differences between experimental and control in the post-test (Figure 1). Significant main effects were found in the Self-assessed creativity of the experimental group and Post-test were significant (Table 4), $F(1, 588) = 40.14$, 7.42 , $p < .05$. The self-assessed creativity also improved in both experimental group and control group. The students who attended the DiE lessons improved better than those in the control group (Figure 2).

Table 3

Different Group and different time on kindergarten students' abilities ANOVA table

	<i>F</i>	<i>Sig.</i>	η^2
Between group			
Group	3.38	.001	.048
Precision	2.55	.111	.005
Expressiveness	3.21	.074	.006
Learning motivation	4.96*	.026	.009
Cognitive empathy	.08	.771	.000
Affective empathy	5.32*	.021	.010
Self-assessed creativity	2.29	.131	.004
TCTDP	.65	.420	.001
STT	10.04**	.002	.018
Within group			
Time	40.56***	.000	.375
Precision	82.52***	.000	.131
Expressiveness	134.95***	.000	.198
Learning motivation	37.10***	.000	.064
Cognitive empathy	4.43*	.036	.008
Affective empathy	9.80**	.002	.018
Self-assessed creativity	12.61***	.000	.023
TCTDP	132.27***	.000	.195
STT	89.83***	.000	.141
Time x Group	3.22	.000	.045
Precision	.24	.626	.000
Expressiveness	5.04*	.025	.009
Learning motivation	1.74	.187	.003
Cognitive empathy	.04	.848	.000
Affective empathy	.15	.694	.000
Self-assessed creativity	4.99*	.026	.009
TCTDP	1.45	.229	.003
STT	.10	.747	.000

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4

The simple main effects of time and group on the kindergarten students' abilities

		<i>F</i>	Sig.	η^2
Expressiveness Communications				
Group	Experimental	90.66***	.000	.135
	Control	68.36***	.000	.105
Time	Pre	7.317*	.007	.012
	Post	.724	.395	.001
Self-assessed creativity				
Group	Experimental	40.14***	.000	.064
	Control	.24	.623	.000
Time	Pre	.040	.842	.000
	Post	7.415*	.007	.012

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

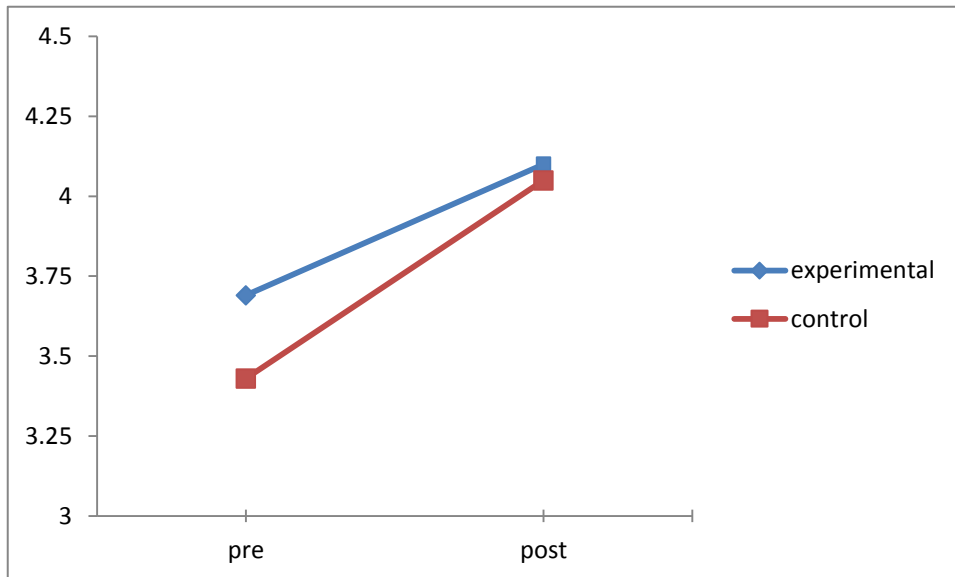


Figure 1 The expressiveness in communications between different groups and times on kindergarten students

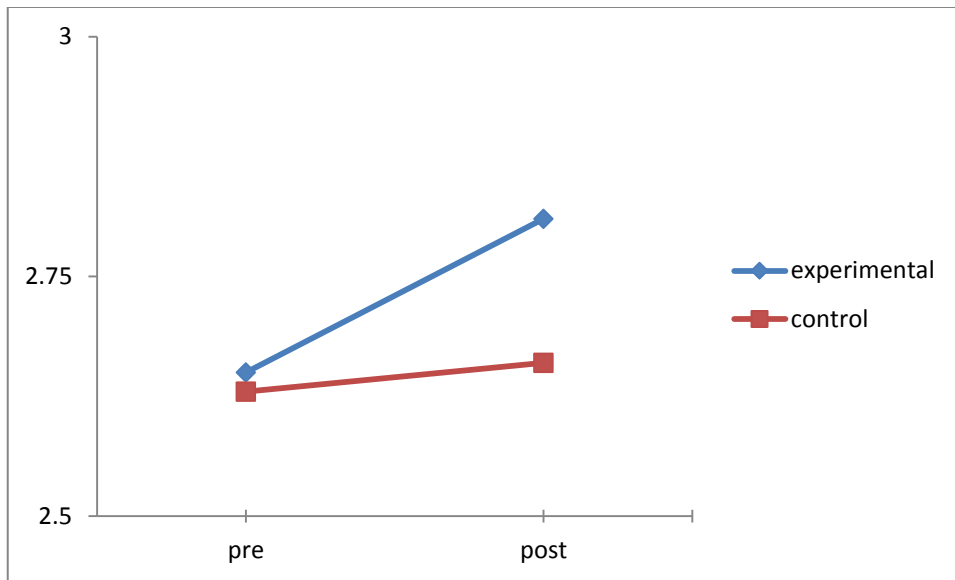


Figure 2 The self-assessed creativity between different groups and times on kindergarten students

3.1.2 Primary School Students

Two ways MANOVA was conducted to test the differences in the independent variables between the experimental group ($N = 354$) and control group ($N = 284$) on the 8 dependent variables for the primary school students.

The results showed that no interaction effect was found in the variables between time and different groups of students, $F(8, 629) = 1.22, p = .284, \eta^2 = .015$, except that the figural creativity (TCT-DP) got a significant interaction effect, $F(1, 636) = 5.14, p = .024, \eta^2 = .008$. The simple main effect (Table 6) on the group and Pre-test was significant, $F(1, 648) = 8.45 \sim 68.82, p < .05$, suggesting that the figural creative ability of primary experimental students and the control students decreased, while there were no significant difference in the post-test (Figure 3), and the experiment group decreased much more than control group.

Table 5

Different groups and different times on Primary students' abilities ANOVA table

	<i>F</i>	<i>Sig.</i>	η^2
Between Subjects			
Group	3.52*	.001	.043
Precision	.45	.501	.001
Expressiveness	.02	.883	.000
Learning motivation	1.03	.311	.002
Cognitive empathy	1.00	.318	.002
Affective empathy	.48	.489	.001
Self-assessed creativity	3.82	.051	.006
TCTDP	7.04**	.008	.011
STT	15.42***	.000	.024
Within Subjects			
Time	15.09***	.000	.161
Precision	6.57*	.011	.010
Expressiveness	7.69*	.006	.012
Learning motivation	7.12*	.008	.011
Cognitive empathy	.02	.902	.000
Affective empathy	1.37	.242	.002
Self-assessed creativity	3.16	.076	.005
TCTDP	77.41***	.000	.109
STT	23.69***	.000	.036
Time x Group	1.22	.284	.015
Precision	.01	.907	.000
Expressiveness	.11	.736	.000
Learning motivation	.03	.864	.000
Cognitive empathy	1.22	.270	.002
Affective empathy	.81	.368	.001
Self-assessed creativity	.00	.955	.000
TCTDP	5.14*	.024	.008
STT	2.81	.094	.004

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6

The simple main effect of time and type on the primary students' creative drawing abilities

	<i>F</i>	Sig.	η^2
TCT-DP			
Group			
Experimental Group	68.82***	.000	.096
Control Group	22.93***	.000	.034
Time			
Pre	8.45**	.004	.013
Post	1.20	.274	.002

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

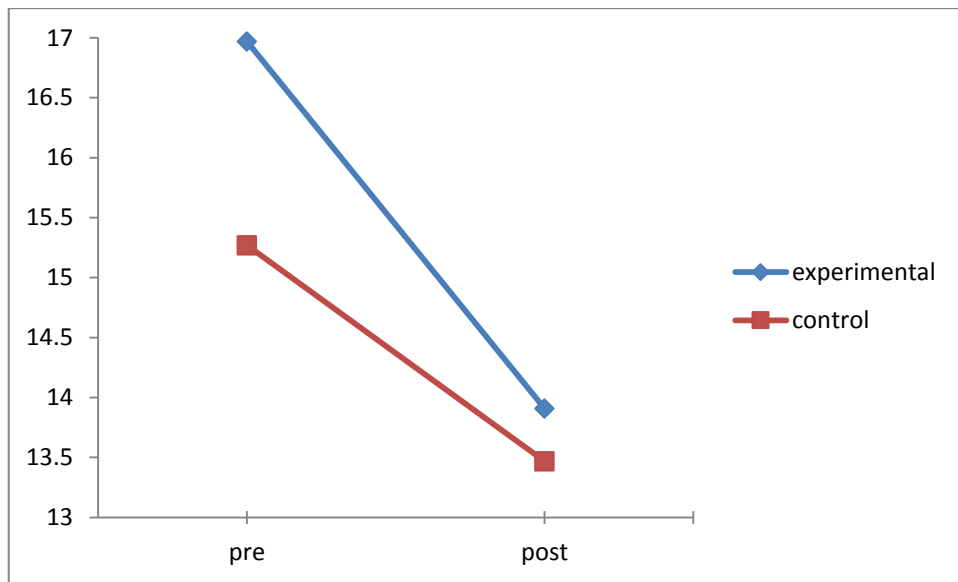


Figure 3 The TCT-DP between different groups and times on primary students

3.1.3 Secondary School students

Two ways MANOVA (Table 7) was conducted to test the differences between the independent variables of the experimental group ($N = 98$) and control group ($N = 81$) on the 8 dependent variables for the secondary school students.

Table 7

Different groups and different times on secondary students' abilities ANOVA table

		<i>F</i>	<i>Sig.</i>	η^2
Between Subjects				
	Group	.93	.495	.042
	Precision	.60	.439	.003
	Expressiveness	1.22	.271	.007
	Learning motivation	3.61	.059	.020
	Cognitive empathy	1.29	.257	.007
	Affective empathy	3.67	.057	.020
	Self-assessed creativity	1.66	.199	.009
	TCTDP	.05	.818	.000
	STT	.26	.613	.001
Within Subjects				
	Time	3.77***	.000	.151
	Precision	.13	.717	.001
	Expressiveness	0.39	.531	.002
	Learning motivation	8.76*	.004	.047
	Cognitive empathy	.88	.349	.005
	Affective empathy	3.09	.081	.017
	Self-assessed creativity	1.34	.249	.007
	TCTDP	3.94*	.049	.022
	STT	1.72	.191	.010
	Time x Group	1.41	.194	.062
	Precision	5.04*	.026	.028
	Expressiveness	2.82	.095	.016
	Learning motivation	.14	.707	.001
	Cognitive empathy	.05	.832	.000
	Affective empathy	.04	.844	.000
	Self-assessed creativity	2.53	.114	.014
	TCTDP	.60	.109	.014
	STT	0.81	.370	.005

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

The results showed that there was no interaction effect between time and different group of students, $F(8, 170) = 1.41, p = .194, \eta^2 = .062$, while the precision in communication got a significant interaction effect, $F(1, 177) = 5.04, p = .026, \eta^2 = .028$. The simple main effect (Table 8) on the control group was significant, $F(1, 181) = 3.93, p < .05$. The control students' precision in communication decreased as the time passed.

Table 8

The simple main effect of time and group on the secondary students' abilities

		<i>F</i>	<i>Sig.</i>	η^2
Precision communication				
Group	Experimental	1.98	.161	.011
	Control	3.93*	.049	.021
Time	Pre	.539	.464	.003
	Post	3.18	.076	.017

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

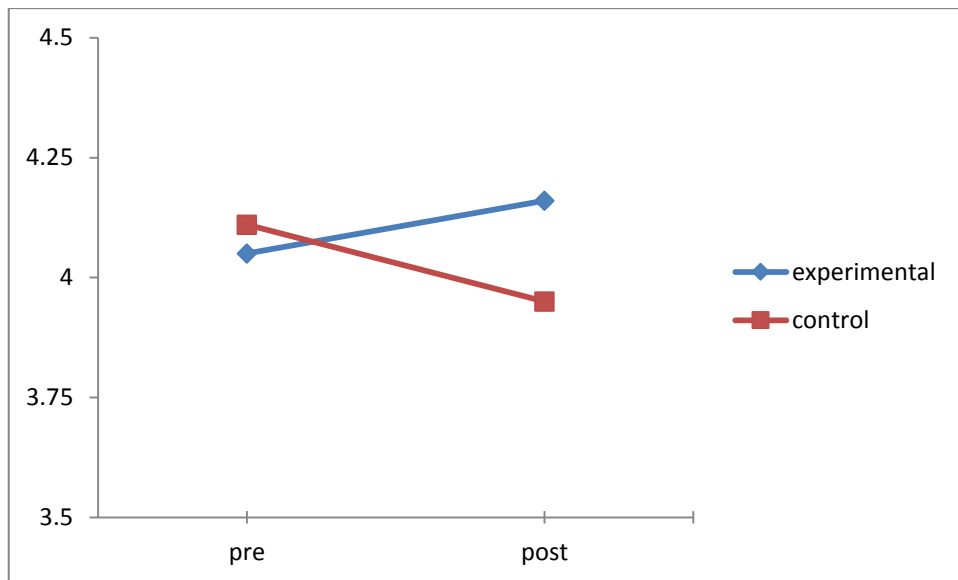


Figure 4 The precision in communication between different groups and times on secondary students

3.2 Teachers

Repeated measure of analysis of variance was conducted to test the differences between two different independent variables in the experimental group ($N = 175$) and control group ($N = 80$) at different time points (Pre-test, Post-test) on the 4 abilities (Table 9, 10).

Table 9

Means and Standard Deviations of the testing variables at the pre- and post-test

	Experimental Group				Control Group			
	Pre		Post		Pre		Post	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Creative Self-efficacy	3.48	0.53	3.74	0.46	3.47	0.44	3.59	0.40
Positive affirmation	4.91	0.70	5.20	0.65	4.85	0.65	5.11	0.60
Negative awareness	3.51	0.80	3.41	1.03	3.63	0.85	3.47	0.78
Resilience belief	4.53	0.82	4.66	0.88	4.37	0.77	4.44	0.73
Expectation of DiE	3.96	0.47	4.04	0.42	-	-	-	-

Table 10

Different group and different times on teachers' abilities ANOVA table

		<i>F</i>	Sig.	η^2
Between Subjects				
Group		1.02	.395	.018
	Creative Self-efficacy	1.62	.204	.007
	Positive affirmation	.66	.418	.003
	Negative awareness	.62	.432	.003
	Resilience belief	3.60	.059	.015
Within Subjects				
Time		10.36***	.000	.153
	Creative Self-efficacy	32.42***	.000	.122
	Positive affirmation	27.79***	.000	.107
	Negative awareness	3.25	.073	.014
	Resilience belief	1.93	.166	.008
Time x Group		1.39	.237	.024
	Creative Self-efficacy	4.42*	.037	.019
	Positive affirmation	.09	.771	.000
	Negative awareness	.23	.629	.001
	Resilience belief	.16	.694	.001

The results showed that there was no interaction effect between time and different groups of teachers, $F(4, 230) = 1.39, p = .237, \eta^2=.024$, while creative self-efficacy got a significant interaction effect, $F(1, 233) = 4.42, p = .037, \eta^2=.019$. The simple main effect (Table 11) on the group and post-test were significant, $F(1,233) = 4.33\sim59.51, p < .05$. Both the experimental and control group teachers increased their creative self-efficacy, while the experimental teachers improved better than the control group.

Table 11

The simple main effect of time and group on the teachers' abilities

		<i>F</i>	<i>Sig.</i>	η^2
Creative self-efficacy				
Group	Experimental	59.51***	.000	.203
	Control	4.33*	.039	.018
Time	Pre	.016	.898	.000
	Post	5.12*	.025	.021

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

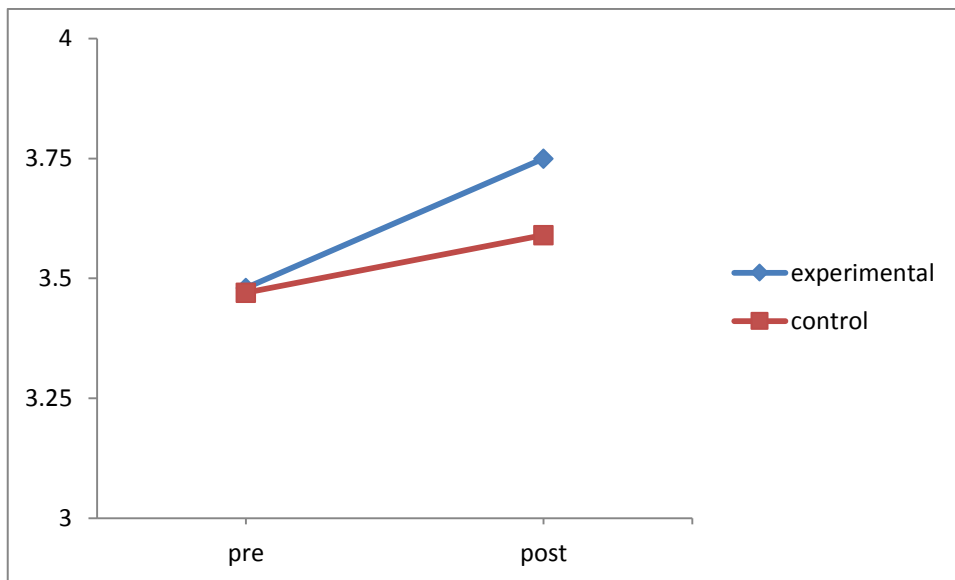


Figure 5 The

creative self-efficacy between different groups and times on teachers

Discussion

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), and kindergarten students (Hui et al., 2011). With reference to the gains in students and teachers after the DiE project, there are four observations. Firstly, in the kindergarten schools, teachers observed that young children from both the experimental group and control group had significant gains in their expressiveness in communication. Teachers also reported that significant enhancement in self-assessed creativity in young children taught in the experimental group. Indeed, both groups of children had higher scores in their verbal and figural creativity.

Secondly, figural creativity of primary school children in both experimental and control groups declined. However, both groups of children did report higher scores in their self-reported precision and expressive in communication and in their verbal creativity. This finding in a decline in figural creativity is different from the results reported in previous studies by Hui and her associates (Hui et al., 2011; Hui, He, & Liu-Au, 2013). It is because both groups of primary school students reported higher gains in communication and verbal creativity. Therefore no significant group differences were detected.

Thirdly, precision in communication of secondary school students in the experimental group improved significantly whereas that of students in the control group reported a gradual decline. Both groups of secondary students reported higher scores in learning motivation and lower scores in figural creativity. This finding is encouraging because it showed that youngsters are aware that they described and discussed in a more precise manner verbally. It

is in line with the literature that drama education was effective in raising verbal skills in students of various levels from different countries (Podlozny, 2000).

Fourthly, teacher participants who successfully infused DiE in their classroom teaching reported a significant increase in their creative self-efficacy. Both groups of teachers had increased in positive affirmation to creative teaching in their school environment. The positive impact on teachers' creative self-efficacy also provides strong evidence that creative teaching is conducive to nurturing creative self-perception in teachers (Horng et al., 2005). Creative teaching not only enhances creativity of students but also strengthens teachers' belief in their own ability to be a creative teacher who employs creative pedagogical strategies.

However, there are a couple of limitations of the present study. The first is on the generalizability of the findings to other preschool, primary school children and secondary school students. The background of the participating kindergartens, primary and secondary schools 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.

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