Impact of Storyline on Creativity among Middle School Children

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ABSTRACT

Storyline being a relatively new technique, there are very few studies that have assessed its efficacy in enhancing creativity. The present study focused on the impact of story line as an intervention on enhancing creativity levels among middle school children. Further, the impact of storyline on verbal and nonverbal creativity as well as among the components of creativity with regard to gender was also assessed. The study followed a pre-post intervention experimental design with a control group. Using convenience sampling, 75 students from a single school consisting of 41 boys and 34 girls were evaluated using the creativity assessment test (Mehdi, 1989). Then based on the creativity scores, the children were systematically allotted to the experimental and control group in such a way that both the groups had equal representation of students from all levels of creativity. The experimental group was provided with storyline as an intervention whereas the control group received no intervention. The results reveal that there is a significant difference between the experimental and control group with regard to total creativity scores, verbal creativity, verbal elaboration and verbal originality scores. Results also indicate that storyline enhanced creativity equally among boys and girls.

Keywords: *Creativity, Verbal and nonverbal creativity, Components of Creativity, storyline, Middle school children.*

Introduction

The advancement during the twenty first century in science, information and technology have been a boon in many areas but it

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also has led to the complexities of life. These complexities demand solutions to already existing problems as well as to new problems in various areas. The role of creativity becomes relevant as it helps in providing solutions for the problems.

Creativity is an ability to do something new or novel which is valuable (such as an idea, a scientific theory or an object, a painting, a literary work, etc.). In other words, creativity can be viewed as a series of dimensions or attributes of an individual's ability to produce valuable ideas, or novel and workable tasks, or a unique talent, or to use imagination to *create socially useful products* (Amabile, 1996; Boden, 2001; Lubart, 1994; National Advisory Committee on Creative and Cultural Education, UK (NACCCE), 1999; Onda, 1994; Rogers, 1954; Zabelina and Robinson, 2010). Creativity doesn't just contribute to individuals, but it also contributes to society and culture ultimately. Cannatella (2004, p. 121) suggested that "The need for creativity is biologically, physically, and psychologically an essential part of human nature and that it is necessary for human growth and cultural striving". Hence it is imperative that the skill of creativity is enhanced. Many of the previous studies have confirmed the efficacy of various intervention techniques such as play, brainstorming, appreciative inquiry, creative reversal act (CREACT), etc., in enhancing creativity. (Berretta and Privette, 1990; Harkow and Rosa, 1996; Garaigordobil, 2006; Karakelle, 2006; Chavez-Eakle 2009; Eow et. al. 2010; Kangas, 2009; Sak and Oz, 2009; Subbotsky, Hysted and Jones, 2010; Garaigordobil and Berrueco, 2011; George, and Basavarajappa, 2016; Rizi, Yarmohamadiyan, and Gholami, 2011; Smogorzewska, 2011).

The aforementioned studies also show that these interventions were provided to participants who belonged to the age group from five year old to even adults. Erikson et al., (1959) and Piaget (1983) have suggested that the sensitive period of developing higher order thinking skills like creative thinking, critical thinking is around 10 years to 12 years of age. Studies by other researchers have also identified that peak periods of development of creativity falls within 10–12 years of age. Hence, subjecting children to interventions to enhance creative thinking (higher order thinking) at the sensitive period of development (10 years to 12 years) can be more beneficial than subjecting them to interventions at the earlier or later stages of development. Hence the present study focused on middle school children (10–12 years) which is within the sensitive period of development of creativity.

Among many creativity enhancement techniques, storyline is a relatively new technique (Bell and Harkness, 2006). The findings from the earlier studies (Bell and Harkness, 2006; McBlain, 2007; Smogorzewska, 2011) have shown that storyline helps in enhancing originality and provides the opportunity to elaborate, and encourages the use of visualisation, imagination, transformation and synthesis. However, the number of empirical studies to check its effectiveness in enhancing creativity is few. Hence, the present study has made an attempt to verify the effectiveness of storyline in enhancing creativity and its components among middle school children.

Objectives

- To find out the impact of storyline on creativity and its components, and
- To find out if any significant gender difference exists with regard to the impact of storyline on creativity and its components.

Based on the objectives the following null hypothesis were proposed for the study.

Hypotheses

- There is no significant impact of storyline on creativity and its components, and
- There is no significant gender difference with regard to the impact of storyline on creativity and its components.

Method

Design of the Study

The present study adopted a pre-post intervention experimental design with a control group.

Sample

For the present study, the researcher chose a single school and students from a single grade (V grade) to control the environmental factors. Thus, 75 middle school children (41 boys and 34 girls) between the ages of 10.6 to 12.6 years (V grade) from a state board school (co-educational) of Tamil Nadu, India were selected. Those children who were physically or mentally challenged and those who were exposed to similar interventions earlier were excluded.

Research Tool

Creativity was assessed using Mehdi's (1989) test of creative thinking. The test consists of verbal and nonverbal test for creative thinking. The verbal test of creative thinking includes four sub tests with stipulated time limits namely — consequence test (15 minutes), unusual uses test (12 minutes), similarity test (15 minutes), and production improvement test (6 minutes).

The nonverbal test of creative thinking includes three sub-tests with fixed time limits, namely picture construction activity (10 minutes), incomplete figures activity (15 minutes) and triangles and ellipses activity (10 minutes). The total time required to administer the test is 1 hour 23 minutes.

Further, as directed by the author the sub-tests were scored for fluency, flexibility, elaboration and originality. The author reported test-retest reliability ranges from 0.896 to 0.959 for verbal creativity and 0.932 to 0.947, for nonverbal creativity. The validity coefficients for factor scores and the total creative thinking scores are high enough (sig. beyond 0.01 level) for both verbal and nonverbal tests of creative thinking.

Procedure

The study included three phases: pre-intervention phase, intervention phase and the post-intervention phase.

Pre-intervention phase

The selected students (n=75) were administered the research tool and then percentiles were computed separately for boys and girls. Thereafter, the students were categorised into low (0–33 percentile), moderate (34–66 percentile) and high (67 and above) levels of creativity. Further, the students were sequentially allotted to the experimental (n=39) and control groups (n=36) in such a way that both the groups have students from all the three levels (low, moderate, high) of creativity scores. Further to check if the groups are randomised/matched, independent sample *t* test was applied to the total creativity scores (composite score of all the components of creativity) of both experimental and control group. The results (t (73)=0.64, p=0.67), indicate that there was non-significant difference between the groups with regard to the total creativity score. In other words, both the groups are matched with regard to total creativity and any change in the post test could be attributed to the effect of intervention.

Intervention phase

The intervention module for the present study included ten activities, and was prepared by referring to the previous studies (Bell and Harkness, 2006) and the life skills training package published by RIE (NCERT), Mysuru (George, 2005). All the activities in the intervention module were *group* activities and were given to the experimental group (n=39), whereas the control group (n=36) was not subjected to any intervention and were attending their regular classes wherein their respective teachers engaged them with academic sessions. Each activity of the intervention was carried out within a span of 80 minutes. Thus, the *ten sessions* of intervention for the experimental group were completed in 800 minutes. However, before starting the intervention sessions (ten sessions) the researcher conducted two sessions of ice breaking to enable the group members to become familiar with each other and to the researcher. The activities were conducted within the school premises (inside the computer lab, which was spacious enough and free from other disturbances and distractions maintaining a uniform intervention situation) during the school timings.

For every activity, the experimental group was further categorised (using different methods) in sub-groups so that the activities could be carried out in a more meaningful way. Subgroups consisted of 5/6 members. Care was taken to see that the members within the subgroups were not the same as in the previous activities. The common instructions given to the students were that; *they had to develop a story from the fragments they received. They had to plan a title for their story. Their stories should have a moral message and every participant in the group should take part in the discussions of framing the story. The stories should not be copied from any book or from movies.* After every activity, the researcher asked the groups to identify and appreciate all the creative ideas of each group.

Post intervention phase

After 10 sessions of intervention, post-test was done by administering the verbal and nonverbal test of creative thinking (Mehdi, 1989) on both the experimental and control groups and scored.

Statistical techniques used

For the purpose of data analysis, appropriate statistics like descriptive statistics, and *t* tests were calculated using SPSS for windows (version 16.0).

Results

The pretest data reveals that 32% of the selected sample possessed low levels of creativity, 33.3% of them had moderate levels of creativity and 34.7% of them expressed high levels of creativity. Among the girls 38.2% expressed low levels of creativity, 29.4% expressed moderate levels of creativity and 32.4% expressed high levels of creativity. However, among the boys 26.8% expressed low levels of creativity, 36.6% expressed moderate and high levels of creativity respectively.

Table 1

The results of independent *t* test from the gain scores of Creativity and its components

Components of creativity		Groups	Mean	SD	Mean differences	*t* values	Sig
Elaboration	nonverbal	Experimental	21.33	11.37	2.86	1.12	0.24
		Control	18.47	9.12			
	verbal	Experimental	17.67	11.65	6.42	2.31*	0.02
		Control	11.25	12.39			
Originality	nonverbal	Experimental	1.97	4.96	1.71	1.71	0.09
		Control	0.28	3.42			
	verbal	Experimental	19.87	16.68	8.98	2.60*	0.01
		Control	10.89	12.73			
Fluency (verbal)		Experimental	15.87	13.39	4.07	1.29	0.20
		Control	11.81	14.01			
Flexibility (verbal)		Experimental	19.33	13.49	3.14	1.08	0.28
		Control	16.19	11.42			
Nonverbal creativity		Experimental	23.31	12.91	4.56	1.63	0.11
		Control	18.75	10.99			
Verbal creativity		Experimental	72.74	43.40	22.61	2.40*	0.01
		Control	50.14	37.53			
Total creativity		Experimental	96.05	46.93	27.16	2.59*	0.01
		Control	68.89	43.55			

*Significant at $p < 0.05$

To find out if there was significant enhancement of creativity levels in comparison to the control group; first, the differences between pre-test and post intervention scores for the total creativity scores and its components were computed for both the experimental and control group. Thereafter, to know if these differences obtained

were significant, *independent t test* was computed on the *pre-post test differences (gain scores) of the total creativity scores and its components between the experimental and control groups*. Table 1 shows significant difference between the experimental and control group with regard to the gain scores on total creativity, verbal creativity, verbal elaboration and verbal originality. No significant differences were observed between the experimental and control group with regard to the scores of fluency, flexibility, nonverbal creativity, nonverbal elaboration and originality.

The mean values from the gain scores show that experimental groups have a higher mean compared to the control group, indicating that the intervention has created enhancement in the creativity levels of the experimental group. The slight improvement in the creativity levels of the control group could be attributed to the practice effect on the questionnaire, and probably the students in the control group would have discussed with their friends in the experimental group after their regular school hours about the activities being given to them, which in turn would have given them insights.

Since, significant differences were obtained between the experimental and control groups with regards to the total creativity and some of its components (verbal creativity, verbal elaboration and verbal originality), the hypothesis is partially rejected.

Table 2

Results of independent *t* test from the gain scores of Creativity and its components between both genders

Components of creativity		Groups	Mean	SD	Mean differences	*t* values	Sig
Elaboration	nonverbal	Girls	24.39	13.38	5.68	1.58	0.12
		Boys	18.71	8.83			
	verbal	Girls	19.67	11.14	3.72	0.99	0.33
		Boys	15.95	12.07			
Originality	nonverbal	Girls	1.06	2.60	1.7	1.07	0.29
		Boys	2.76	6.28			
	verbal	Girls	22.89	15.06	5.6	1.05	0.30
		Boys	17.29	17.91			
Fluency (verbal)		Girls	19.94	15.20	7.56	1.81	0.08
		Boys	12.38	10.80			
Flexibility (verbal)		Girls	21.61	16.4	4.23	0.98	0.34
		Boys	17.38	10.40			

Nonverbal creativity	Girls	25.44	13.86	3.96	0.96	0.35
	Boys	21.48	12.08			
Verbal creativity	Girls	84.11	42.37	21.11	1.54	0.13
	Boys	63	42.87			
Total creativity	Girls	109.56	42.71	25.08	1.70	0.09
	Boys	84.48	48.26			

Note: None of the values are significant at 0.05 levels

Further, to find out the impact of storyline between the genders of the experimental group, the pre-post intervention differences (gain scores) of the total creativity and its components were computed for the girls and boys of the experimental group. Later, to know if the differences obtained are significant, independent *t* test was applied on the gain scores obtained for the total creativity and its components between boys and girls. The results (Table 2) revealed that boys and girls in the experimental group did not differ significantly. Hence, the hypothesis is accepted.

Discussion

The results from Table 1 show that there is significant difference between the experimental and control groups with respect of total creativity, verbal creativity, verbal elaboration and verbal originality. In other words, the intervention storyline has been effective in enhancing creativity and some of the verbal components. Thus, the result of the present study confirms the results of earlier studies, which affirm that creativity can be enhanced through interventions (Antonietti, 2000; Fleith et al., 2002; George, K.M. and Basavarajappa, 2016; Komarik and Brutenicova, 2003; Saxon et al., 2003). Further the results of the present study are also in line with the findings of the earlier studies, which have shown the positive effects of storyline on creativity. (Bell and Harkness, 2006; McBlain, 2007; and Smogorzewska, 2011).

The result also shows that storyline was found to be more effective in enhancing verbal creativity and its components compared to nonverbal creativity. Storyline as an intervention involves more of verbal responses through the discussions of framing the stories focusing on the episodes, setting and dialogues from the fragments provided. These verbal responses which are stimulated would have helped in enhancing verbal creativity. In addition, though the present education system focuses on learning by doing, the assessments and evaluation gives more weightage

to the verbal skills. Hence the children would be attuned to express their creativity more through verbal responses. The above mentioned reasons could have led to the enhancement in verbal creativity scores.

The present study has also made an attempt to know whether there are any significant differences between the genders with regard to the impact of storyline in enhancing creativity. The results from table 2 reveal that there is no significant difference between the genders with regard to the impact of storyline. In other words, storyline has been effective in enhancing creativity equally among boys and girls. An intervention of this nature would have been interesting for the children as it was different from their routine class activities which in turn would have led to the enhancement of creativity for both the gender.

Conclusion

- Storyline has led to a significant enhancement with regard to the total creativity scores, verbal creativity, verbal originality, verbal elaboration, fluency and flexibility scores.
- Though there has been enhancement, no significant enhancement was observed with regard to nonverbal creativity, fluency and flexibility, nonverbal elaboration and nonverbal originality.
- The intervention of storyline has been effective in enhancing creativity equally among boys and girls.

Limitations and Suggestions

The major limitation of the study was that no attempt was made to check the efficacy of the intervention specifically on children who have scored low, moderate and high levels of creativity. Since the present study has focused only on the impact of one intervention, future researches can focus on conducting and comparing the efficacy of more number of interventions on enhancing both verbal and nonverbal creativity. Studies can also focus on giving combinations of interventions to check if that works better than giving interventions individually.

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