



RESEARCH PAPER

Development of Genuine Ideas with Question Answer Strategy: An Empirical Evidence from Islamabad Model School Pakistan

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ABSTRACT

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"Creativity" is a unique way to solve problems. Major aim was to determine an effect of Question Answer Strategy on "Genuineness" of ideas in "Creativity". The study was quasi experimental. The "convenience" sampling technique was used. Experiment was performed in Islamabad Model School. There were thirty students in each group. The instrument used for data collection was a test validated by the expert opinion from the Faculty of Education, Allama Iqbal Open University Islamabad. The reliability of test was determined by reliability analysis. The scoring rubrics were used to analyze the "Creativity" in terms of "Genuineness". The scores of tests of experimental group and control group were compared by t-test. There was a significant difference in the performance of control group and experimental group. It was recommended that the Question Answer Strategy method might be helpful for the improvement in "Creativity" of students in other subjects too.

Introduction

The dynamics "Creativity" is a key in a research and novel process. New and innovative ideas could be produced from "Creativity". It could also be considered an interface of propensity process and atmosphere where person could create a new innovative thing in a communal prospective. "Creativity" is fundamentally coupled with the scientific knowledge and science. The Creative procedure of science includes to a certain new scientific questions problems and hypothesis are originated on the basis of present knowledge, scheming new experiments to check these hypothesis, facts and evidences are collected and theories are verified. This approach permits diverse solutions and answers which are novel blend of information and techniques. "Creativity" resolves problems, communicate efficiently and acquire leadership

which is vital to cope with the challenges of modern society (Seyihoglu & Kartal, 2010). So, in this regard, just knowledge is not an enough thing rather the capacity to think and learn team up and communicate is important. Zubaidah, Fuad, Mahanal & Suarsini (2017) reported Moon (2008) that one of the 21st century skills is "Creativity" skill which students should be trained. To address and meet the complicated challenges of the modern world, trained professional in "Creativity" independent learning, problem solving, team building including other higher order abilities are required. Hadzigeorgiou (2012) stated that foundation of science is based on "Creativity" skills. Hence, education especially science education requires calling attention to these skills including "Creativity" which the important skill of this century is so that students can meet the challenges of modern and changing world.

Around the world, scientific research has been a pillar of basic education modification, but in Pakistan situation is not good. National Education Policy 1998, Pakistan said that there are 145,960 primary and 24,590 high/higher Elementary schools in the public sector.

Match with ground realities (Rashid & Mukhtar, 2012). Teachers are failing to nurture analytical and logical thinking abilities among students (Ali, 2011). Keeping in mind some effort is being done by Pakistan Science Foundation to inculcate twenty first century skills among students, but these efforts are started only at primary and elementary level. So, keeping in mind this whole scenario this study is performed to see the effect of Question Answer Strategy based teaching on "Creativity" of students at Elementary level. "Creativity" is the bringing of new ideas which are valuable through various means (Boden, 2001). Scientific education is based on scientific investigation and it is an important method of learning. Creativity is production of novel products (Mumford, 2003). "Creativity" is related with novelty of ideas and their implementation to make something new from existing ones (Greenstein, 2012). Baker & Rudd (2001) considered "Creativity" skills very important for the students. As a result of reform at national level in science classes, the science teachers are now using research base teaching (Wang, 2010). Therefore, the researchers are doing research in implementation of scientific investigation in classes with the uniqueness of the situation in various grades. Throughout this study, "Creativity" means, for pupils, those operationally defined ability is calculated in different subjects and on different instruments through paper and pencil tests and are scored accordingly. Worth of this stability is evidenced through many studies which are reviewed and reported in this study. Question Answer Strategy is not like a single activity rather is a process which engages students in continuous adaptation and production of their personal knowledge under the given context. Now a day's scientists are using scientific Question Answer Strategy as a tool in many practices as ahead

Literature Review

Higher order skills are improved by Question Answer based learning like critical thinking, intellectual and rational growth (Lee, 2011). Cheng (2011) said that diverse forms of expression of scientific knowledge can produce creativity. In Creativity Anoiko (2011) quoted Richard Florida's notion for the regions having 3T's tend to have increased level of economic development along with more creative professionals. Here 3T's are economic Technology, Tolerance and Talent. Creativity of the children could be enhanced through simulation and opportunities by doing to seek information and its arrangement also students be given the freedom of posing questions and experimentation (Soh, 2001).

Sayed and Mohamed (2013) found no significant difference between sexes on "Creativity". Thought diverging is a well-recognized element of creativity (Charles and Runco, 2001) that are essential to the development children should be taught like other basic skills. "Creativity" ability is necessary for all spheres of life. There are various factors which influence divergent thinking. Question Answer can put together teaching and research where both teachers and students perform like co-learner. In order to cope with confronts of the twenty first century, development of "Creativity" should be the priority of educational system. Barrow (2010) declared students are motivated by Question Answer method. Blanchard, Southerland, Osborne & Sampson (2010) claimed that higher order thinking skills of students improved through Question Answer method also retention of knowledge improved through this method. Trivedi and Bhargava (2010) conducted a secondary study on main school (ages 15 to 17) students of the city of Jodhpur to study the correlation between academic success and creativity to measure the level of creativity. Creativity tests (Passi test of creativity) were administered to subjects. Results of the previous review have been taken as school student success. The results revealed differences between the sexes on creativity based on the combination of high and low achiever. Correlation between academic success and creativity; impact of the equality of the sexes was, however, less creative as compared to educational outcomes. For encouragement of "Creativity", active learning strategies are more effective as compared to traditional teaching. Student's acquirements of "Creativity" learning skills, long lasting retention of knowledge, cooperative work, and liability of their own learning, self- sufficiency are fostered by the pedagogical techniques which are based on Question Answer, communication, problems solving in a flexible environment. Akintunde, Ogunsanya and Olatoye (2010) studied a relationship along with creativity of students, there and academic achievement in provisions of CGPA scores. They found a negative correlation between creativity and CGPA gain. Hence, the superior the creativity of the students', the poorer the CGPA score. In an environment where individuals are from different domains and fields working together communicate their ideas and share their knowledge. Their interaction and potentially positive and productive

conflicts can boost "Creativity". Cubukcu & Eksioglu (2009) emergence, advancement and permanence of "Creativity" differ from individual to individual field specific and field general. Nuangchalem (2009) stated that Question Answer-based learning activities are helpful to promote students in terms of both cognitive and analytical thinking. Heller (2007) reported that convergent thinking is a component of "Creativity". Question Answer base teaching is a representation of a broad-spectrum investigative process. In which scientist use imitate real investigations through which students attain different skills to utilize their knowledge and get solutions to difficult problems (Savery2006). Runco (2006) reported a conclusion that divergent thinking is related to the knowledge of certain tasks, especially when the tasks cover a field. For example, a horticulturist would probably score well on a test of divergent thinking if all tasks related to plants. But the study also shows that experiential bias can be avoided by tests of divergent thinking of crafts where tasks represent unknown areas. Sternberg (2006) explored that creativity in education is the future need of the national economy. Lee & Theraariault (2013) is of the view the role of working memory in "Creativity" procedures is very important. Academic and nonacademic experiences of student both can change divergent thinking ability. Gibson (2005) found that "Creativity" ability and creative personality are partially related to each other. The view of Craft (2005) is that in the late 1990 creativity in education has been globally viewed significant in conduct never supposed before. Cheng (2004) explored that the relation between "Genuineness" and appropriateness is difficult to demonstrate. Scott, Leritz, & Mumford, (2004) bring into being the meta-analysis of 70 studies; cognitive framework should be used as base for successful interventions. Educational procedures put pressure on the problem recognition, thought creation also theoretical blend that leads to success in studies. Another study was conducted to assess the effects of three classroom sessions (formal, informal and intermediate) on the creative output of the students of the college. Meador (2003) reported a positive effect of a model based on Question Answer method on "Creativity" of students in science. According to Runco, Illies and Reiter Palmon (2003) there is a negative association among reserved conduct, divergent and convergent thinking.

Lloyd and Howe (2003) positively relation between solitary active play and divergent thinking. Runco and Charles showed that "Genuineness" was more reliable predictor of creativity than appropriateness. In another similar study, the authors remarked —Although applicant that things creative theories are both original and proper meaning, it is difficult to demonstrate the "Genuineness" and relevance are themselves related (Runco, Illies and Reiter - Palmon, 2003). In a study, Lloyd and Howe (2003) examined the positive relationship between multiple forms of solitary games and convergent and divergent thinking. Chinn & Malhotra (2002) affirmed that novice scientist' affluent concepts in which they build up investigative skills through Question Answer. Aroua & Kour (2014) explored a positive relationship between

scientific creativity and school environment at secondary level. Devi (2002) found that disciplinary practices and creativity are positively correlated. Hu and Adey (2002) put forward a scientific creativity model according to which "Creativity" in science consists of an amalgamation of creative procedure, attributes of the creative individual and ensuing products. Jhonson (2010) reported a positive effect of a model based on Question Answer method on "Creativity" of students in science. Yager (2000) stated that the course of scientific awareness sees the program as inspiring that ought to be well thought-out significant in the creation and development of a creative mind. Therefore, the researchers perceived the idea of intervention of Question Answer Strategy for the development of "Genuineness" in ideas related to "Creativity" in the subject of chemistry in a high school of Islamabad Pakistan.

Material and Methods

The method and procedure adopted in this study is mentioned here in below:

Design

This experimental study adopted "Quasi-Experimental" design and more precisely

"The Pre-test, Post-test non-equivalent control group Design" was followed.

Sampling/Sample

Convenience sampling technique was adopted to select the sample of the study. The sample of study comprised students of class 9 studying in IMSC, Islamabad. The researchers did not disturb the timetable of respective school so whole classes were selected for the purpose of this research.

Instrument

The data of this study was collected from achievement test scores by administering same test as Pre-test and Post-test. Beside basic cognition/knowledge area, the test also contains questions that assess "Genuineness" of the students' ideas. The reliability of test was calculated as 0.88 and the test was validated by a group of specialists in Allama Iqbal Open University Islamabad.

Procedure

The intervention of lesson study was applied for eight weeks covering three lessons in a week. Total 24 lessons were delivered following the "Question Answer Strategy" pattern. The success of the intervention was determined by comparing both

groups on the basis of their performance in pre-test and post-test. The data were obtained in quantitative form (test scores of students).

Data Analyses

The t-test was executed for analysis of data through SPSS software. The data were analyzed in the tables ahead. The data were analyzed in the following ways:

Overall comparison of experimental and control groups in “Creativity” in science.

Overall comparison of experimental and control groups in “Genuineness” attribute of “Creativity” in science.

Task-wise comparison of experimental and control groups in “Creativity” in science (“Genuineness” of ideas).

Table 1
Comparison of Control and Experimental Groups before Start of Experiment

Group	Pre-Test Mean
Control Group (n 30)	15.01
Experimental Group (n 30)	15.30

Table 1 shows the comparison of pre-test mean scores of both the control and experimental groups in overall performance of “Creativity”. It also shows that both groups were almost same in “Creativity” skill.

Table 2
Overall Comparison “Genuineness” in Post-Test

Group	df	Table Value
Control Group (n 30)	58	13.78
Experimental Group (n 30)		

Table 2 indicates that in “Creativity” test control group has mean score in “Genuineness” is 7.97 in post-test. In the same skills the experimental group has mean value “Genuineness” in post-test is 27.53. The t-value for comparison of performance of control group and experimental group is 13.78 at $df(58)$, $p > 0.02$ is significant

Findings

These findings were observed from the analysis of the data:

1. The results of data analysis revealed that in pre-test, the two groups were at the same mean score so should be treated as equal before the experiment.
2. Overall attainment of the high school chemistry students taught with Question Answer Strategy was significantly better than the students taught without it. The experimental group has significant improvement in form of "Creativity" skills as found by the data. Consequently, null hypothesis H_{01} was discarded.
3. On "Genuineness" of ideas' assessment based test items, experimental group appeared on better mean score than control in posttest. Therefore, the null hypothesis H_{02} was discarded. Therefore, in case of "Genuineness", the improvement found by experimental group is significantly higher than the control group as found by the data.

Conclusion

This study provided insight into the Question Answer-based teaching which fostered acquisition of complex skills like "Creativity" among science students. Skills and knowledge that can be applied across disciplines are the current social demands of the world. The following conclusion is made from the findings and data analysis:

It is concluded that traditional methods of teaching are not effective for inculcation of "Creativity" skills in Pakistan. The Question Answer method of teaching is better than traditional methods for producing the "Creativity" of students in Pakistan at secondary level. Question Answer method of teaching improved the "Genuineness" in "Creativity" skills as compared to routine practices of teaching "Creativity" skills.

Recommendations

1. The Question Answer-based teaching method is recommended for science teachers of secondary schools in order to enhance "Creativity" of their students.
2. The Question Answer might be valuable for trainings, workshops and seminars for teachers to create awareness about Question Answer-based teaching method and "Creativity" skills.
3. Studies on effect of Question Answer-based teaching on "Creativity" of students of primary and elementary level are also recommended.
4. It is recommended to check Effect of Question Answer method on critical thinking of students at all the educational levels.

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