

The Development of a Creative and critical thinking education method for Primary School Teachers

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Abstract - Teaching to develop thought processes is the opposite of teaching to fix automatic responses. Learning without thinking critically becomes memorization. A pupil can 'recite' accurately without understanding what he is saying. Verbalism is often mistaken for thinking. Some teachers tend to over-emphasize memory. A large number of the grades given to children are based upon their ability to reproduce certain facts from memory. The emphasis is on memorizing of material. Humans have to live among a variety of information technology and news that could be obtained conveniently and fast. As a result, various incidents were perceived throughout time as a result of reading, listening, and watching. As a result, human development for good reading skills leading to thinking processes in dimensions of analytical thinking, synthetic thinking, or critical thinking was required to transform human resources' quality into high potentiality in all aspects, as well as readiness for creative adjustment and global collaboration. It fit within the 21st century's conceptual framework for learning. Thinking was the process of using one's intellect as a tool for learning, contemplating, and assessing what was good and wrong. Many instructors stressed the importance of thinking capacity, saying, "Every step of the learning process ought to be centered on students' critical thinking training." "The majority of knowledge offered in the classroom, as well as memorization from textbooks, deprived pupils of experience, critical thinking, and experience synthesizing for greater wisdom." "The globalization movement has brought both good and evil." As a result, the educational process should assist pupils in gaining information, thinking, and correct cognition, as well as learning how to change them." Critical Thinking was very significant since it was deliberate thinking used for carefully examining and judging the occurring information or circumstance based on one's own knowledge, reasoning, and experience in carefully exploring the evidences in order to arrive at logical conclusions. As a result, critical thinking became a symbol of self-worth because it was a fundamental requirement for educational management.

Keywords - Education, Primary, Critical thinking, teachers, creative

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1. INTRODUCTION

In the annals of history, education had many facets, nuances and understandings but it had the same aim, i.e. to make the recipient learned. The modes of operation of imparting knowledge have been different but the beneficiaries profited from what was done. In other words, the gurus, known as the teachers initiate the students to acquire wisdom which would free them from the darkness of ignorance.

If merely a student's potential can be turned into a widely recognized behavior, a teacher has shown their worth. Hence, it is critical to understand the psychology of the learner. Teacher's capacity to inspire and encourage pupils is one of the most important qualities. As a result, the most important aspect in education is the teacher. A student's ability to succeed in school is directly tied to his or her own

initiative. So in addition to being an expert in their field of study, teachers should be able to read the thoughts of their pupils and appreciate their uniqueness.[1]

Emotional Intelligence (EI) is one of the tools of the teachers for understanding the tempo of learning styles of the students. It enables the teachers to meet the learning needs and environment of the students in different cultures effectively. These aspects have to be harvested by his or her own experiences to share what he or she has been learning in theory. The teachers have to impart thoughtful and inspiring values to their students in their studies.

1.1 Education in India

India's educational institutions date back to the ancient cities of Taxila and Nalanda. With the creation of the British Raj, Western education was embedded in Indian society. In India, education is a shared responsibility between the central government and the states, with some obligations falling to the national level and others being left to state discretion. The right to an education is enshrined in several sections of the Indian constitution. Almost all of India's colleges and universities are under the supervision of either the central or state government.[2]

1.2 Primary Education

"The advancement of elementary education is one measure of the broader social and economic growth of the society as a whole," said Naik (1966), a prominent educator in our country. At this period, a well-planned and implemented educational system is critical in providing the correct basis for a child's cultural, emotional, ethical, intellectual, moral, physical, social, and spiritual growth. It also makes a significant contribution to the development of emotional and national integration ideals. So, it is extremely important to make a sufficient investment at this level of education.[3]

1.3 Organization of Primary Education

The phrases "elementary," "basic," and "primary" are frequently used in the same context. The National Policy of Education (NPE) has used primary education for grades one through eight. In its paper National Curriculum for Elementary and Secondary Education: A Framework (1988), the NCERT states that elementary education (8 years) is divided into two stages: primary (5 years) and upper (5 years) (3 years). The Department of Education of the Ministry of Human Resource Development (HRD) employs elementary education, which comprises primary classes (classes I through V) and middle courses (classes VI to VIII). In general, basic education refers to a mixture of two educational stages: primary I through V (ages 6 to 11) and upper primary schools (ages VI to VIII) (age group 11 to 14). Primary education is prioritized by the Indian government till the age of fourteen. The Indian government has also prohibited child labor to protect youngsters from dangerous working circumstances. However, due to economic disparities and social conditions, both free education and the prohibition of child labor are difficult to implement. The District Primary Education Programme (DPEP) was established in 1994 with the goal of universalizing primary education in India through revamping and revitalizing the current system. 85% of the DPEP is funded by the central government and the remaining 15 percent is funded by the state. A total of 160000 new schools, including 84000 alternative education schools, have been created as a result of the DPEP, which has received funding from UNICEF and other international organizations. In certain areas, the Gross Enrollment

Ratio for this primary education program has been as high as 93–95 percent during the previous three years.[4]

1.4 Thinking

The word thinking is used carelessly to mean almost any mental operation. Everyone is sure he knows what thinking is? This type of thinking about thinking is useless. We often refer thinking today - dreaming, reveries, a flight of fancy or building castles in Spain, or 'shooting the moon' etc. and other mental streams which may be more chaotic. Thinking as defined is not memory or imagination, or opinions or believing or intuition, or insight. The thinking uses all of these.[5]

1.5 Critical Thinking

The term 'critical' as it is used here is does not mean thinking, which is negative or finds faults or censors; but rather thinking which evaluates reason. Here the term critical thinking is intended to highlight the intellectual autonomy. The critical thinking model embarks upon the task of fostering thinking skills in the students like making interpretations, analysis, synthesis, evaluation, making plausible inferences, exploring assumptions etc.

Critical thinking is described as good, unemotional judgement that results from an analysis of the material or a situation closely allied to the scientific attitude, critical thinking can be developed as the result of the problem solving approach to learning It is also involved in a more personal analysis of a situation, or written or an oral presentation.

Critical thinking as defined by Beyer (1987), is "Determining the authenticity, accuracy and worth of information knowledge claims." Robert Ennis (1985) states that, "Critical thinking is reasonable reflective thinking that is focused on deciding what to believe or do." This concept provides for a wide range of applications, including decision-making, problem-solving, metacognition, value judgment, and Bloom's taxonomy's higher knowledge level.[6]

1.6 Characteristics of Critical Thinking

A person may be said to think critically to the degree that he exhibits the following skills and attributes:[7]

1. **Recognizes and defines problems** - He is sensitive to issue circumstances; he understands and expresses the nature of any challenge that prevents him from achieving a desired objective; he simplifies complicated difficulties down into manageable components.
2. **Formulates adequate hypothesis** - He approaches problems in a flexible manner; he is skilful in establishing an appropriate solution model.

3. **Makes pertinent selection** - He is aware of the need for facts. He is able to keep a problem clearly in mind. He consistently discriminates between relevant and irrelevant assumptions. He distinguishes between reliable and unreliable information and exhibits good judgement.
4. **Draws valid conclusions** - He is rational and applies both deductive and inductive reasoning to reach the conclusion.
5. **Applies conclusions** - He grasps the general principles, which relate to a problem. He is apt in applying these generalizations whenever they are appropriate and he is capable of decisions, of actions consistent with his conclusions.

1.7 Critical Thinking in Education

The first reference of critical thinking is found in Plato's recording of Socrates' instruction. When a person studies, assesses, and interprets information before making a decision, they are using critical thinking. Self-evaluators, problem solvers, clear analyzers, receptive to others' views, careful (thinking before acting), open-minded, good listeners, and keen to take on challenges are all characteristics of critical thinkers. A critical thinker is someone who is always thinking and interacting with the world.[8]

Students' critical thinking skills may be enhanced by assisting them in constructing their thoughts after evaluating, interpreting, and reviewing data. However, in previous educational institutions, this method was a flaw. Previously, instructors and mentors believed that children might thrive in life by learning facts from books and lessons. However, in today's educational system, this technique has undergone a significant change. With technological improvements, information flows considerably faster nowadays, changing the way students study and experience the globe. Misrepresentation, incorrect information, and erroneous data, on the other hand, travel at the same rate. Critical thinking is crucial in this situation. The major goal of education is to critically analyze all information before solving issues and making decisions, which is accomplished successfully through critical thinking skills taught in the classroom.

2. REVIEW OF LITERATURE

Koutsoupidou and Hargreaves (2009) found that children's musical improvisation skills improved after exposure to improvisational techniques. Research shows that improvisation has a substantial impact on the growth of creative thinking in children's music-making, especially in the areas of musical flexibility, originality, and syntax.[9]

Erdogan, Akkaya and Akkaya (2009) found that sixth grade primary school pupils' creative thinking levels were significantly influenced by Van Hiele model-based training. A substantial difference in

post-test scores for the many components of creative thinking, such as fluency, originality, abstract titles, creative forces lists, and inventiveness, was found in the experimental group after the training.[10]

Almeida, Prieto, Ferrando, Oliveira and Ferrandiz (2008) used data from Spain and Portugal to examine the construct validity of the Torrance test of creative thinking. These cognitive functions are not robust enough to explain the variation in results, according to this theory. However, the key components are identified with the goods in each subtest, demonstrating that format, substance, and demand on TTCT specific activities play a significant role in the elaboration factors.[11]

Memmert (2006) proven that a diverse sports enrichment program had a positive impact on the development of creative thinking in team ball games among brilliant youngsters. Creative performance in talented youngsters improved significantly when compared to a control group and a treatment group that was not gifted.[12]

Middleton (2005) Design and technology education, according to the author of an essay titled Creative Thinking, Values, and Design, is not only a great place to teach ethics and values, but it may also be one of the most important reasons to include design and technology programs in school curricula.[13]

3. OBJECTIVE OF THE STUDY

- To select appropriate thinking tools for enhancing creative and critical thinking skills.
- To study the effectiveness of the instructional strategy in enhancing creative and critical thinking skills in teachers.

4. METHODOLOGY

- **Research design**

The current inquiry was a 12-week intervention study with a developmental focus. Students' creative and critical thinking abilities may be improved through the use of appropriate material matter, according to a research. In order to carry out this experiment, the researcher used a pre-experimental design, which does not allow for much control over external factors. Pretest-posttest design was used for the current study's research method.

Taking into account the challenges faced by schools and instructors, the practicality of commuting, the costs of conducting experiments, and many other restrictions, the design was developed. In light of the risks posed by this experimental design, however, the researcher guaranteed that this study's internal validity could be established by implementing the following measure. History and maturation are two extrinsic elements that might have a significant

influence on the internal validity. The term "extraneous variable" refers to occurrences that may occur between the pre- and post-tests that are not related to the experimental treatment. They took precautionary measures to ensure that the 9 researchers did not expose their subjects to any additional treatments while conducting their research study.

- **Sample/ participants**

Participants

Teachers in the Visnagar taluka of Mehasan district who use textbooks from the Gujarat State Board of School Textbooks in Gandhinagar made up the study's population.

Sample

Every teacher in Visnagar taluka was chosen for the study because of their readiness to take part in the research at all times. At least 153 instructors have shown an interest, and the administration has granted their requests. Twenty-five instructors were chosen at random to participate in the current study because 153 seemed like a high amount.

- **The tools for the present study**

The goal of this intervention research was to improve teachers' ability to think critically and creatively. Researchers devised a technique to track teachers' growth in creative and critical thinking in order to better understand how the intervention affected them. A survey of existing instruments for studying creative and critical thinking by other researchers led to the development of two new ones by the investigators:

- Creative and critical thinking tool
- Reaction scale
- **The development of tool for measuring creative and critical thinking**

Appendix I contains the created method for assessing creative and critical thinking. These processes were used to create this instrument to assess creative and critical thinking.

Step-1 Identification of dimensions of creative and critical thinking.

Step-2 designing the test items

Step-3 Validation of the tool

Step-4 Pilot study

Step-5 Scheme of scoring

- **Variables of the study**

There were two types of variables involved in the present study (i) Independent and (ii) Dependent variable

(i) Independent variable

Treatment depending on the researcher's teaching technique is viewed as an independent variable.

(ii) Dependent variable

Teachers' ratings on three elements of creativity (fluency, flexibility, and originality) and on a range of critical thinking questions were used as dependent variables in this study

5. EFFECTIVENESS OF THE EXPERIMENTATION

5.1 Effectiveness of Experiment of awareness scale of creative and critical thinking of Male, female

Table 1: Effectiveness of Experiment of awareness scale of creative and critical thinking of Male, female

Group		N	MEAN	SD	Sed	t-Value	Sig
male	Pre-test	20	49.35	3.96	1.34	4.83	SIG
	post-test	20	55.85	4.52			
female	Pre-test	20	51.25	2.22	0.74	9.47	SIG
	post-test	20	58.25	2.45			

- **Pre- test and post-test of sample of male primary school teacher on awareness scale of creative and critical thinking.**

Pre-test mean and standard deviation for male primary school teachers were 49.35 and 3.96, whereas post-test mean and standard deviation for male primary school teachers were 55.85 and 4.52. It has been shown that the mean score of Male primary teachers on the Post-Test on the awareness scale of creative and critical thinking is higher than the mean score of Male primary teachers on the Pre-Test, which is significant at the 0.01 level of significance.

On the awareness scale of creative and critical thinking, the mean score of male primary teachers on the Post-Test was substantially higher than the mean score of male primary teachers on the Pre-Test at the 0.01 level of significance. When it comes to creative and critical thinking, men primary teachers performed better on the Post-Test than male primary teachers did on the Pre-Test.

- **Pre- test and post-test of sample of female primary school teacher on awareness scale of creative and critical thinking.**

Pre-Test: Female primary teachers' awareness of

creative and critical thinking is 51.25 and 2.22, respectively; Post-Test: Female primary teachers' awareness of creative and critical thinking is 58.25 and 2.45, respectively. When it comes to assessing students' ability to think critically and creatively, a woman's post-test score was greater than a woman's pre-test score, which is significant at the level of significance of 0.01 on a t-test for significance.

Using the creative and critical thinking awareness scale, female primary school teachers' mean post-test scores were shown to be significantly higher than their pre-test scores, with a p-value less than 0.01. On the Post-Test, female primary teachers' awareness of creative and critical thinking is stronger than their knowledge of creative and critical thinking on the Pre-Test.

Table 2: t-Value of Pre-Test and Post-test on Creative thinking with Fluency, Flexibility and Originality of Male sample on Writing creative uses

Group		N	Mean	SD	SED	t-Value	SIG	r
fluency	PRE	20	6.65	0.99	0.3	9.28	SIG	0.77
	POST	20	9.4	0.88				
Flexibility	PRE	20	4.1	1.21	0.35	10.54	SIG	0.74
	POST	20	7.75	0.97				
originality	PRE	20	0.7	0.66	0.27	3.66	SIG	0.14
	POST	20	1.7	1.03				

Table 3: t-Value of Pre-Test and Post-test on Creative thinking with Fluency, Flexibility and Originality of Male sample on Listing things with creativity

Group		N	Mean	SD	SED	t-Value	SIG	r
fluency	PRE	20	3.6	1.27	0.41	7.2	SIG	0.89
	POST	20	6.55	1.32				
Flexibility	PRE	20	1.3	1.13	0.42	8.64	SIG	0.49
	POST	20	4.9	1.48				
originality	PRE	20	0.1	0.31	0.24	5.72	SIG	0.16
	POST	20	1.5	1.05				

Table 4: t-Value of Pre-Test and Post-test on Creative thinking with Fluency, Flexibility and Originality of Female sample on Writing creative uses

Group		N	Mean	SD	SED	t-Value	SIG	r
fluency	PRE	20	6.6	1.05	0.27	12.11	SIG	0.5
	POST	20	9.85	0.59				
Flexibility	PRE	20	4	1.08	0.29	14.17	SIG	0.34
	POST	20	8.1	0.72				
originality	PRE	20	0.7	0.57	0.23	4.07	SIG	0.09
	POST	20	1.65	0.88				

6. CONCLUSION

In the above experimental research, the t-values of the Pre- and Post-Test on the Awareness scale of creative and critical thinking, as well as critical thinking and Creative thinking with Fluency, Flexibility, and Originality primary teachers, were found to be significant with male, female. As a consequence, the experiment's treatment was shown to be significant on the Awareness scale of creative and critical thinking, as well as critical and creative thinking with primary instructors of fluency, flexibility, and originality, with a positive link between pre-test and post-test scores. With the use of images from a primary school text book, teachers and specialists may better understand the need of adopting critical thinking and creative thinking exercises in the classroom and how to go about doing so using various illustrations.

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