Metacognition and Creative Thinking of High School Students

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The current study aimed to identify the Meta cognition and creative thinking among high school students. The sample of the study consisted of 300 high school students. Creativity scale (CS) was developed to collect data. Susan Barkman and Krisana Machtmes tool was modified suitably for the study of problem-solving skills. Data were analyzed by using product moment correlation, t-test and ANOVA test. The results of the study revealed that creativity and problem-solving skills are not significantly correlated to each other. Significant difference was found between Male and Female students in their creativity and problem-solving skills.

Keywords: Creative Thinking, Students, Learning and Metacognition.

Introduction

"Metacognition" is one of the latest buzz words in educational psychology, but what exactly is metacognition? The length and abstract nature of the word make it sound intimidating, yet it's not as daunting a concept as it might seem. We engage in metacognitive activities every day. Metacognition enables us to be successful learners, and has been associated with intelligence (e.g., Borkowski, Carr, & Pressley, 1987; Sternberg, 1984, 1986a, 1986b).

Metacognition refers to higher order thinking which involves active control over the cognitive processes engaged in learning. Activities such as planning how to approach a given learning task, monitoring comprehension, and evaluating progress toward the completion of a task are metacognitive in nature. Because metacognition plays a critical role in successful learning, it is important to study metacognitive activity and development to determine how students can be taught to better apply their cognitive resources through metacognitive control.

Most people associate creativity with the arts like writing a novel, painting a picture, or composing music. These are all creative endeavors, but not all creative thinkers are artists. Indeed, many jobs require a lot of creative thinking, despite having nothing to do with the arts. Creativity simply means being able to come up with something new. If you can do that, not only can you enrich your own personal life, but you'll have an advantage in whatever field you enter.

Statement of the Problem

Present investigation is designed to study how far metacognition and creativity of the high school students influence their orientation. Therefore, the study is entitled as "metacognition and creative thinking of high school students."

Need and significance of the study

Education upgrades one's knowledge which helps people to solve their problems. Metacognition helps to perform many cognitive tasks more effectively. According to the report of the Education Commission (1964), "The destiny of a nation is being shaped in the classroom." Those who are having metacognitive ability can realize their own strength and weakness. The present study stresses on the awareness of metacognition and how it helps in creativity. Creativity increase intelligence, thinking ability and various other skills. Research is needed to describe and explain spontaneous developmental acquisitions in this area and to identify creativity. Students are quite limited in their knowledge about Metacognition and creativity. This study reveals to identify heterogeneous group of student's creativity and metacognition.

Objective of the Study

- To find out the significant difference of metacognition of high school students with regard to gender.
- To find out the significant difference of creative thinking of high school students with regard to gender.
- To find out the significant difference of metacognition of high school students with regard locality.
- To find out the significant difference of creative thinking of high school students with regard to locality.

Hypotheses Framed

The following are the major hypotheses framed for the present investigations.

- There is no significant difference in the metacognition with regard to high school student's gender.
- There is no significant difference in the creative thinking with regard to high school student's gender
- There is no significant difference in the metacognition with regard to high school student's locality.
- There is no significant difference in the creative thinking with regard to high school student's locality.

Tools used in the Present Study

The present study aims at studying the metacognition and creativity of high school students in Kanyakumari District. For collecting data required for the study of the problem one may have to use various scientific devices for gathering facts related to the study. These devices are called tools. The selection of suitable tool is a necessary condition for any successful research. The investigator depending on the nature of the study used the following tools for data collection.

- Personal Data Sheet
- Metacognition Inventory (Constructed and validated by R. Sopha, 2015)
- Creative Thinking Test (Modified version of Wallach-Kogan creative thinking test)

Personal Data Sheet

The personal data sheet is prepared to collect data regarding variables such as Name of the student, Name of the School, Gender, Locality, Type of Management, Medium of instruction, and Type of family.

Metacognition Inventory

For measuring Metacognition of high school students, a metacognition inventory was used. (Constructed and validated was by R. Sopha, 2015). The questions of the test are simple and seeking responses in the form of 'Not at all', 'Some times' and 'Always'. A high score of the test indicates the high level of Metacognition of high school students and low scores of the test indicates low level of Metacognition of high school students. The test contains 24 items.

Creativity Test

The creativity test is given to the subject. The subject is asked to go through the instructions of different verbal and non-verbal tests like instances, alternate uses, similarities, pattern meaning and line meaning. The time limit is responded for verbal subtest is three minutes and the time limit for the two non-verbal tests is thirty seconds for each card. After the subject responds all the subtests the number of responses is determined. For each subtest there are separate instructions. The subjects are to go through these instructions and respond accordingly. For each meaningful response one mark is assigned. The mean scores for three verbal tests are determined by adding the scores of the three tests and dividing the total by 16. The mean scores for the non-verbal tests are determined by adding the scores of two sets and dividing it by 12.

Sample

The Sample for the present study consists of 300 high school students studying in different schools in Kanyakumari District during the academic year 2016-2017. The investigator has adopted stratified random sampling technique. While selecting the subject's due representations were given to factors such as Gender, Locality, Type of school, Type of family, age, religion,

birth order, father qualification, mother qualification, income, mother occupation and father occupation.

Statistical Techniques Used

For the study the investigator used the following statistical techniques

- Percentage
- Mean
- Standard Deviation
- t –test
- Person product moment method of correlation co-efficient
- ANOVA

Hypothesis –1

There is no significant difference in the mean scores of metacognitions with regard to high school students based on gender.

Table N0 - 1
Metacognition of High School Students Based on Gender

Gender	No	Mean	SD	t-value	p-value	Remark
Boys	160	54.13	4.630	2.909	.089	NS
Girls	140	54.90	5.263			

The calculated ‘t’ value (t-2.909) 'p' value (p-.089) is at 0.05 level of significant. Therefore the null hypothesis is accepted. Hence there is no significant difference in the mean scores of metacognitions of high school students based on gender.

Hypothesis –2

There is no significant association between creative thinking with record to students and their gender.

Table – 2

Creative Thinking of Students and Their Gender

Gender	N	df	Mean Square	t value	p value	Remark
Boys	160	.381	298	.034	-.662	S
Girls	140	.381	291.233			
Total						

The calculated ‘t’ value (t-.034) 'p' value (p- -.662) is at 0.05 level of significant. Therefore the null hypothesis is rejected. Hence there is significant difference in the mean scores of creative thinking of high school students based on their gender.

Hypothesis–3

There is no significant difference in the mean scores of metacognitions with record to high school students based on locality.

Table No – 3

Metacognition of High School Students Based on Locality

Locale	N	Mean	SD	t-value	p-value	Remark
Rural	204	54.26	5.063			NS
Urban	96	54.97	4.664	.037	.848	

The calculated ‘t’ value (t-0.37) 'p' value (p-.848) is at 0.05 level of significant. Therefore the null hypothesis is accepted. Hence there is no significant difference in the mean scores of metacognitions of high school students based on locality.

Hypothesis –4

There is no significant association between creative thinking with record to students and their locality.

Table – 4

Creative Thinking of Students and their Locality

	Locality	N	Mean	Std. Deviation	t value	p value	Remark
V15	Rural	204	55.36	4.790	.979	.323	NS
	Urban	96	57.03	5.180			

The calculated ‘t’ value (t-.979) 'p' value (p-.323) is at 0.05 level of significant. Therefore the null hypothesis is accepted. Hence there is no significant difference in the mean scores of metacognitions of high school students based on locality.

Findings

The findings emerged from the analysis of data collected are summarized below:

- The calculated ‘t’ value (t-.034) 'p' value (p- -.662) is at 0.05 level of significant. Therefore, the null hypothesis is rejected. Hence there is significant difference in the mean scores of creative thinking of high school students based on their gender
- The calculated ‘t’ value (t-.034) 'p' value (p- -.662) is at 0.05 level of significant. Therefore, the null hypothesis is rejected. Hence there is significant difference in the mean scores of creative thinking of high school students based on their gender.

- There is significant difference in the mean scores of metacognitions of high school students based on locality. This finding is supported by the following results (p-.848, which is no significant at 0.05 level)
- There is significant difference in the mean scores of creative thinking of high school students based on locality.This finding is supported by the following results (p-0.323, which is no significant at 0.05 level).

Conclusion

Metacognition refers to an awareness of our cognitive process like thinking and learning. It is synonyms with knowing about what we know. It extends beyond the more awareness of cognitive process or activities to the deliberate and conscious control of these activities. Metacognition simply means an awareness of one’s own thinking. It helps children to be conscious of what they know and can do. For attaining this they should be taught how to draw purposefully on what knowledge and to display it when working on problems. It means pupils should be encouraged to think actively about their thinking. Metacognition and creative thinking among high school students due to gender, locality, type of school, age, type of family, religion, birth order, father’s qualification, mother’s qualification, income, father’s occupation and mother’s occupation was determined by the collection of 300 samples of students by which the capability of high schools students was analyzed.

Reference

Reddy Lokanadhan and Santha Kumar [2004] Knowing when, where and how to remember. *A problem of metacognition advances in instruction psychology*, Hillsdale: Erlbaum.

Pramod (2008) *Working with emotional intelligence*. London: Bloomsbury Publishing.

Abbas (2010) Metacognitive aspects of problem solving. Hillsdale: Erlbaum.

Parvathi Usha (2011) Edu. Tracks. Neelakammal Publication Pvt. Ltd.

Prabha and Dhull (2011) Educational psychology. New Delhi: Eurasia Publishing House.

Rekha (2012) Metacognition and cognitive monitoring: A New era of cognitive developmental inquiry. *American Psychologist*, 34, 906-911.