



# ERADICATION OF STUDENTS' MISCONCEPTIONS AND EFFECTIVENESS OF INNOVATIVE IDEAS OF TEACHING IN GEOGRAPHY

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## Abstract

This study focused on the eradication of students' misconceptions in Geography. The main purpose of this research was to identify the misconceptions in Geography and attempt to established the comparative effect of innovative ideas of teaching in correction of misconceptions by comparing the conventional method of teaching among VIII standards students' of South 24Pargana district of West Bengal. This study included Quasi-experimental research which described the level of students' misconceptions and comparative effect of teaching methods in correction of misconceptions. It involved two groups of students, experimental group and control group. In this study 200 VIII standard students of three high schools made up the sample. The sample was selected by using purposive random sampling technique. Self-developed tool Misconception Identification Test (MIT) was used for the study. The Cronbach's alpha reliability coefficient of the scores was estimated as 0.77. Content validity was established by senior experts in this field. Descriptive statistics and also inferential statistics are worked out for analysis the results. The results revealed that the levels of misconceptions of two groups were same and innovative ideas were more effective and showed a significantly higher than conventional method of teaching after eradication of misconceptions identification tests score. Also concluded that there was no difference between boys and girls in correction of misconceptions through innovative ideas. The findings indicated that the MIT was a reliable and valid measuring tool for investigating VIII standard students' conceptual understanding and correction of misconceptions.

### Keywords:

Misconceptions;

Innovative ideas;

Misconception Identification Test;

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## 1. INTRODUCTION:

Misconceptions is refers to the erroneous understandings are termed **alternative conceptions or misconceptions**. Alternative conceptions or misconceptions are not unusual in fact; these are a normal part of the learning process (Wikipedia, 2015). Students generally form ideas from their everyday experience, but not all these ideas they developed are correct with respect to the most current evidence in a given disciplines or ideas. Elsewhere, some of the ideas or concepts in different content areas are simply quite complex and very difficult in nature. As a result our understanding of them is viewed flawed. For these reason students, adults, including teachers sometimes have misconceptions in different concepts. (Burgoon, Heddle, & Duran, 2010) [1].

Misconceptions can be referred to as a preconceived ideas or a conceptual misunderstanding [5]. In classroom situation when teachers provide instruction on concepts in various school subjects, students' who already have some pre-instructional knowledge about the topic but it can be erroneous or misinformed. Sometimes, students are unaware that the knowledge they have is often wrong and students come to class with already formed concepts or ideas about a range of scientific phenomena that are not appropriate.

Students, who enter the classroom with inaccurate and pre-existing scientific explanations, can be said as misconceptions or alternative conceptions.

Students either consciously or sub consciously construct their concepts as explanations for the behaviour, properties or theories they experienced [10]. They believe most of these explanations are correct because these explanations make sense in terms of their understanding of the behaviour of the world around them. But, when students are facing with new some information that differs from their existing preconception, a cognitive conflict arises [2]. Consequently if students encounter new information that contradicts their preconceptions it may be difficult for them to accept the new information because it seems wrong. The exceptions do not match their expectations. Under these situations the new information may be rejected, ignored, disbelieved and irrelevant to the current issue, held for consideration at a later period of time.

In order to remove students' misconceptions, it is necessary to identify the sources of these misconceptions [5]. During learning, the student tries to connect new knowledge into his cognitive structure. If he holds misconceptions, these misconceptions interfere with subsequent learning. Therefore, new knowledge cannot be connected to his existing structure and misunderstanding of the concept occurs. [7]. So, students' existing ideas are important factors affecting the development of misconceptions [5].

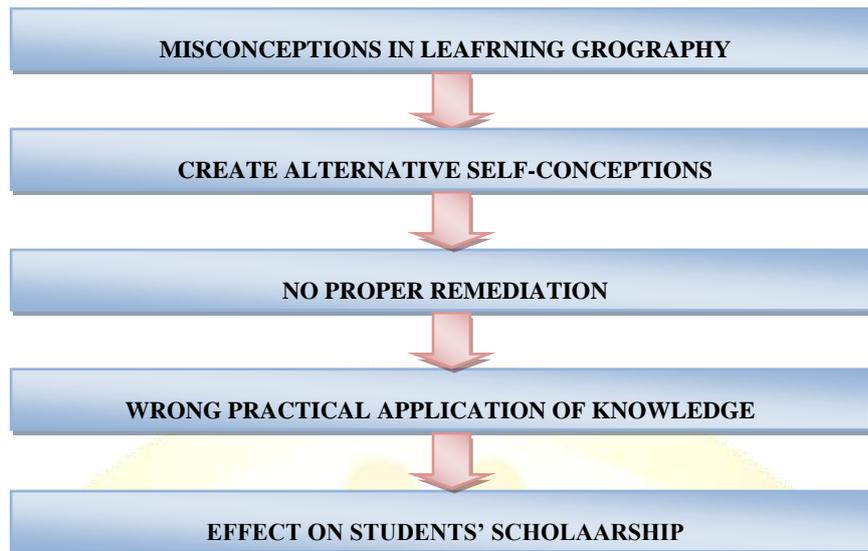
### **1.1 Misconceptions in Geography:**

Misconceptions are common to all academic disciplines and often seem to have students own life (Zaki, 2018) [11]. In some cases students' are proud to believe in some ideas, generally viewed as false (e.g., the Flat Earth Society). The number of studies focusing on students' and teachers' understandings of scientific concepts has grown significantly during the last past three decades (Mustafa & Secil, 2010) [6]. Even if many studies have been carried out to investigate misconceptions about several science topics, relatively fewer studies have been done to determine geographical understanding and misconceptions [6]. Since Geography, as it is usually considered, acts as a bridge between natural and social sciences, it borrows many concepts from both the natural and social sciences as well as having its own concepts. So learning geography means learning many concepts [6]. As Geography involves the understanding of complex processes, patterns and relationships, students often have misunderstandings as well as misconceptions [3]. A number of students have misconceptions commonly on surface in introductory physical geography, climatology classes [8]. They may not express information in exact manner, such as using the terms 'weather' and 'climate' interchangeably because they do not understand the precise meaning of each term. They may use terms incorrectly and carelessly, such as referring to Africa as a country [3]. They make a concept that is wrong for their ignorance, such as saying that all deserts are hot and sandy. In such a content few subject, there will be many occasions when students express ideas and give descriptions which are incorrect.

But the biggest challenge for any teacher is securing each student's attention, motivation and conveying ideas effectively to create a lasting impression. An appropriate instruction in classroom can change students' alternative conceptions or misunderstandings. To tackle learning challenges effectively, teacher should implement innovative ideas that make the class-room experience much more interesting and lovable for the students. In order to be effective, teaching has to be more informative, and organized of opportunities for learning, and a teacher who can stimulate any situation for effective learning using different innovative ideas of teaching. So, it can be said teaching, as a useful and practical art calls for creativity, intuition, expressiveness and improvisation [9]. In this way misconceptions can be easily corrected, and students can get the actual knowledge. In this way, this study focuses on identification and eradication of misconceptions in geography.

### **1.2 Importance of Identification of Misconceptions in Geography Learning:**

As geography is a subject dealing with different process, theory, there are some kinds of misconceptions which students' faces in learning geography, so identification of misconceptions is very much important part in teaching. If misconceptions occur in learning, they create an alternative conception in them, which is not correct. But in school teaching- learning process teachers are used only traditional methods of teaching. No proper remediation systems are there for students' misconceptions. Generally students' are applying their knowledge in wrong explanations. It all effects on students' all round improvement and scholarship.



**Figure: 1** Importance of Identification of Misconceptions in Geography Learning

### 1.3 Innovative Ideas of Teaching:

Innovation is something that is new and original and the application of better solution. An innovative idea is someone that comes up with new ideas, concepts or methods. Here, in the present study innovative teaching ideas refers to the strategies or methods which a teacher will be use for students better learning in the class room. The investigator would use different types of innovative ideas in the class room as per the contents requirement. Like – hand on activity, real life examples, audio- visual material, brain storming questions, power point etc.

### 1.4 Teaching Effectiveness:

Teaching effectiveness is a very important aspect of education because effective teaching can helps in student learning as well as enhancing the students' academic performance or achievement. Kullbert (1989) and Baker (1990) have tried to give a definition of effective teaching that is, "Effective Teaching should stimulate student curiosity and active learning, encourage student analytical, logical, and creative thinking, and increase both their desire and capacity for future learning".

**1.5 Objectives of the study:** The objectives of the present study were as follows:

1. To identify the misconceptions in Geography among VIII standard students.
2. To study the effect of conventional method of teaching in correction of misconceptions among VIII standard students.
3. To study the effect of innovative ideas of teaching in correction of misconceptions among VIII standard students.
4. To study the comparative effect of conventional method of teaching and innovative ideas of teaching in correction of misconceptions among VIII standard students.

### 1.6 Delimitations of the study:

1. This study was delimited to VIII standard of upper Primary level students of (Bengali Medium) South 24Pargana District of West Bengal.
2. The Innovative teaching ideas was implemented on the students of only three schools of South 24Pargana District of West Bengal.
3. This study also confines to the specific area of Geography that is Physical Geography. Content matter for the Misconception Identification Test and Innovative Teaching Ideas was restricted.
4. Size of the sample was delimited to 200.
- 5.

## 2. RESEARCH METHOD:

In the school set up random assignment of subjects was not possible for the researcher. Hence In the present study, the investigator has used Quasi-Experimental research design. Keeping this in mind, the investigator used the design for this study called, Non-randomized Control Group, Pre-test – Post-test Design of Quasi-experimental research. In the school set up random assignment of subjects was not possible for the researcher. For the present study, the investigator has deliberately selected certain units for study from the universe, which is known as purposive sampling.

**2.1 Variables of the study:** The variables of the present study were as under:

**1. Independent Variable:**

- Innovative Ideas of Teaching

**2. Categorical Variable:**

- Gender- Boys – Girls.

**3. Dependent variable:**

Test score Obtained by the students of class 8 on the Misconception Identification test inventory as Pre-test and correction of misconceptions as Post-test.

**4. Control variable:**

- Standard – 8
- Content Matter.

### 2.2 Sample of the study:

In this present investigation the sample of the study consisted of total 200 VIII standard students of WBBSE schools in South 24Pargana district of West Bengal, from which 100 pupils are selected for each group. Samples are selected from three schools. One group formed experimental group and the other group formed the control group. The distribution of sample given below-

**Table No. – 1 (Distribution of Sample)**

Groups	No. of students	Category		Category	
		Girls	Boys	Rural	Urban
Control	100	42	58	52	48
Experimental	100	32	68	48	52
Total	200	200		200	

**2.3 Selection of the Tools used:** Self developed tools were used for this present study-

- Misconception Identification Test.
- Innovative Teaching Ideas.
- Students Test Score after teaching.

#### **Construction of Misconception Identification Test (MIT):**

To identify misconceptions, one of the ways that can be used is the Misconception identification test (MITI) inventory. MIT is a diagnostic test consisting of multiple-choice questions with a combination of confidence on the truth of the chosen answer. If a student's MIT score is low, then it indicates that the student is just guessing while answering. Meanwhile, if a student's MIT score is in a high category, it indicates that the student has a high level of confidence in choosing the answer.

#### **i) Selection of Contents:**

Before constructing the misconception identification test, the syllabus of Geography at the upper primary level was analyzed thoroughly. Based on this syllabus, bank of questions regarding the “Interior of the Earth” unit-I and “Cloud and Rain” unit-V were constructed by the investigator. The contents were divided into 4 sub-units as follows:

**Sub-unit 1:** Components of Earth's Interior (unit-I).

**Sub-unit 2:** Layers of Earth's Interior (unit-I)

**Sub-unit 3:** Types of Cloud's and Precipitation (unit-V)

**Subunit 4:** Types of Rainfall and Precipitation (unit-V)

**ii) Try Out:**

The misconception identification test was administered on 100 students. The students were asked to answer the questions as per instructions. Time limit of the test was decided on the basis of experts' suggestion. They allowed 2 minutes per questions as a result of which total 40 minute was fixed for the test. Response sheet were collected after the allotted time. Marks were awarded as per scoring key.

**Standardization of the tool:**

**i) Validity:**

The content validity was ascertained by the consultation with experts in this field. For content validity, the test was examined by a group of experts in geography, and by the course teacher for the appropriateness of the items as the extent to which the test measures a representative sample of the domain of tasks with respect to the 'Interior of the earth' and 'Cloud and Rain' units of geography. The test was conducted keeping in view the weightages given for content area and experts' comments and opinions on the others it was treated as a valid test.

**ii) Reliability:**

Split half method was employed for the calculation of reliability. The Cronbach's alpha reliability coefficient of the MIT scores was estimated to be 0.77, which is highly significant. It may be concluded from the value of 'r' that the entry level test is highly reliable for the purpose. Therefore, the MIT is a reliable and valid instrument not only to identify students' misconceptions in geography but also to differentiate these misconceptions from lack of knowledge.

**2.4 Research Design:** Design procedure is given below:

1. Investigator administers pre-test (T1C) and (T1E) to measure mean of misconception identification test score of two groups before applying the effective teaching process.
2. Investigator exposes subjects to the treatment through Innovative ideas (X) of teaching, and no treatment for control group rather conventional method (O) of teaching for a given period of time.
3. Investigator administers post-test (T2C) and (T2E) to measure mean of test score to correction of misconceptions after exposure to effective teaching method (X) and (O).
4. Compare (T2C) and (T2E) to determine what difference, if any, the exposure (X) and (O) has made.
5. Apply an appropriate statistical test to determine whether the difference is significant or not.

The effect of treatment would be equal to the mean score of the test in relation to correction of misconceptions after the treatment minus the mean score of misconceptions identification test before the treatment. In short, research design for the present study can be described in brief as given below (According to koul, 2012) [4].

**Table No. – 2. Research Design of the study**

Groups	Pre-test	Independent variable	Post-test
Control	T1C	Teaching through Conventional Method (O)	T2C
Experimental	T1E	Teaching through Innovative Ideas (X)	T2E

\*T1E Represents Pre-test for Experimental Group

\* T2E Represents Post-test for Experimental Group

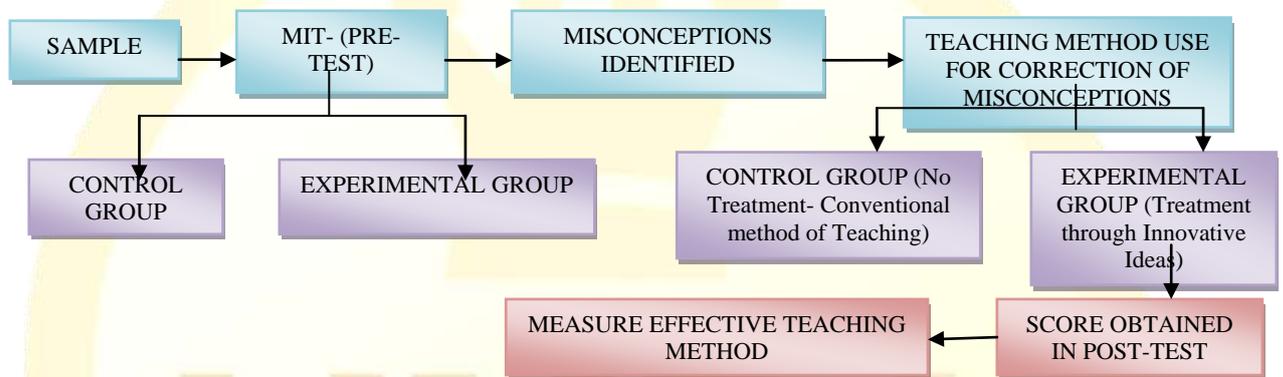
\*T1C Represents Pre-test for Control Group

\* T2C Represents Post-test for Control Group

**Table No. – 3. Phases of the Study**

Stage	Control Group	Experimental Group
I Pre-testing	Identification of misconceptions in Geography	Identification of misconceptions in Geography
II Treatment	Teaching Geography through Conventional Method of Teaching	Teaching Geography through Innovative Ideas of Teaching
III Post-testing	<b>Measurement of scores in correction of misconceptions</b>	<b>Measurement of scores in corrections of misconceptions</b>

**2.5 Process of the Study:** The study conducted in the following way-

**Figure: 2 Process of the study**

### 2.6 Plan of the experiment implemented:

In this study investigator has decided to carry out an experiment on VIII standards students of Bengali medium school in WBBSE. Experiment was carried out in three schools. Nonrandomized, control group, pre test- post test design of Quasi- experimental research was followed in the present study.

The detailed plan and implementation of treatment through innovative ideas of teaching for experimental group is given below.

1. Time-span: 2 days of a week for each school excluding public holidays. Total time duration 4 weeks.
2. Three periods of 40 minutes were taken per day.
3. Investigator administered the pre-test (Misconception identification test) before the treatment.
4. Innovative ideas of teaching were given to class VIII students of three schools in South 24Pargana District.
5. Innovative ideas of teaching were prepared by the investigator for two units of class VIII in WBBSE syllabus.
6. All the alternative concepts were taught by using various activities using Audio-visual aids, hands on activity, real specimens based learning, brain storming questions by the investigator.
7. After completing the treatment, a post-test (Misconception identification test) was administered to find out the effectiveness of the treatments.
9. After administering the tests, required computations were carried out to find the effectiveness of the treatment.

**2.7 Areas of Misconceptions Identified through MIT:** After careful analysis of the answer script of the students based on MIT, it is concluded that:

- Students do not differentiate between magma and lava.
- Concept of the reason behind why the water formed hot into the hot spring is not clear to the students’.
- Why into the centre of earth’s density is denser, is not clear to them.
- Position of SIAL and SIMA in the earth’s crust, do not understand properly.
- Concept of Conventional Current and asthenosphere is not developed rightly.
- Students’ feel misconceptions about when different types of cloud occurs.

- Students' do not understand difference between rain fall and precipitation, and also do not differentiate types of precipitation.
- Concept of Windward side and Downwind side or Leeward side in Orographic rainfall do not developed properly.
- Dew is not precipitation this concept is not clear to them.

## 2.8 Remedial Measures and Treatment Used:

**Table: 4 Treatments for Misconceptions**

MISCONCEPTIONS	USED TECHNOLOGY	TREATMENT
Misconceptions regarding difference between magma and lava	Three Dimension- Videos volcanic eruptions	To eliminate these misconceptions video clips of volcanic eruption and real pictures implemented. With this video students have got the idea about magma and lava concept properly
Misconceptions regarding the reason behind forming hot water into the hot spring.	Three Dimension- Videos of forming the geothermal energy	In this regard investigator showed a video to the students to explaining the concept caused by geothermal energy.
Misconception about density of the earth.	Experimentation- Hands On Activity <ul style="list-style-type: none"> <li>• one glass</li> <li>• small amount of water</li> </ul>	To clear this misconception, investigator applied an experiment (equipments- one glass, some water, soil, gravels, pebbles). It was helpful to the students'.
Misconceptions regarding position of SIAL and SIMA	Two Dimension- <ul style="list-style-type: none"> <li>i) Chart</li> <li>ii) Real Specimens- Granite, Basalt.</li> </ul>	In this regard investigator showed a handmade chart into the class. To understand the reason for situated the layers students' observed some real specimens and it was very helpful to them.
Misconceptions regarding Conventional Current and asthenosphere	Two Dimension- Chart of conventional current	If students' do not understand the reason of forming the conventional current and layer about asthenosphere, investigator used as handmade chart with pointing the features.
Misconceptions regarding time of occurrence of different types of clouds	Two Dimension- Chart consisting with real pictures and also through drawing.	To eliminate this misconceptions investigator used the chart and through proper demonstration students' got clear the concept.
Misconceptions about the difference between rainfall and precipitation	Brain storming questions	To clear the differences between rainfall and precipitation investigator used some brain storming questions and this method was very effective for them.
Misconceptions about Windward side and Downwind side	Three Dimension- Model of Orographic rainfall	Investigator used a model for this topic. Proper execution of Orographic rainfall model in the classroom was very applicable for demonstration of the topic but when teacher taught the concept of Orographic rainfall in classroom then it is mandatory to teacher also produce a model of to differentiate the two concepts.
Misconceptions regarding types of precipitation (As difference between fog and mist)	Three Dimension- videos of different type of precipitation	With the help of videos of different types of precipitation, students' got developed their conceptions.
Misconceptions about why Dew is not precipitation	Experimentation- Hands on activity <ul style="list-style-type: none"> <li>• One glass</li> <li>• Small amount of ice cube</li> </ul>	Investigator administered a experiment with the help of glass and ice cube to explained the concept why dew is not a type of precipitation.

### 3. ANALYSIS AND RESULTS:

In this study, two equated groups, an experimental group comprising of 100 students and as control group comprising of 100 students were subjected to a pre-test and post-test to identify misconceptions and their scores were subjected to descriptive data analysis. Descriptive analysis included the calculation of mean and standard deviation. In present study the purpose of inferential statistics was to measure the significance of difference between means of experimental group and control group on the basis of pre-test and post-test. Significance of hypotheses was found by using t-test.

#### 3.1 Hypothesis Testing:

H<sub>01</sub>. - There is no significant difference between the mean scores of Control Group and Experimental Group in Geography on the basis of misconception Identification Test.

**Table: 5. testing of hypothesis H<sub>01</sub>**

Descriptive statistics					t test for equality of means			Remarks
Independent variable	Dependent variable	N	Mean	SD	Df	t Stat	P(T<=t) two-tail	Not significant at 0.05 level of significance.
Control Group	Pre- test for misconceptions Identification in Geography.	100	7.04	2.28	99	-1.81	0.071*	
Experimental Group		100	7.61	2.23				

**\*0.05 level of significance**

The (Table No.5) shows that the mean of pre-test score of control group is 7.04 with 2.28 SD and the mean of pre-test score of experimental group is 7.61 with 2.23 SD. The both control and experimental group had similar scores for the pre-tests thus denoting that the subjects were similar misconceptions in the content area before the treatment. This again shows that the two groups are equivalent. Whether the difference of mean is significant or not, the t- test is employed and after analysis it was found that (Table No. 5) the calculated  $t(99) = (-1.81)$ ,  $P = 0.071 (P > 0.05)$ . So 't' is Not significant and H<sub>01</sub> is not rejected at 0.05 level of significant. So, the hypothesis was accepted.

H<sub>02</sub> - There is no significant difference between the mean scores of conventional method of teaching for pre-test and post-test in correction of misconceptions in Geography.

**Table: 6 Testing of Hypothesis H<sub>02</sub>**

Descriptive statistics					t test for equality of means			Remarks
Independent variable	Dependent variable	N	Mean	Std deviation	Df	t Stat	P(T<=t) two-tail	Significant at 0.05 level of significance.
Conventional method of teaching	Pre-test	100	7.04	2.28	99	-18.29	1.6161E-33*	
	Post-test	100	9.84	2.08				

**\*0.05 level of significance**

After giving the instruction through conventional method of teaching spanning 5 weeks, the MIT was again used to find whether the instruction had any effect on their performance. The (Table No. 6) shows that the mean of pre-test score of conventional method of teaching is 7.04 with 2.28 SD and the mean of post-test score of conventional method of teaching is 9.84 with 2.08 SD. Whether the difference of mean is significant or not, the t-test is employed and after analysis it was found that (Table No. 6) the calculated  $t(99) = (-18.29)$ ,  $P = 1.6161E-33 (P < 0.05)$ . So 't' is Significant and H<sub>02</sub> is rejected at 0.05 level of significance. So, the hypothesis was not accepted.

H<sub>03</sub> - There is no significant difference between the mean scores of innovative ideas of teaching for pre-test and post-test in correction of misconceptions in Geography.

**Table: 7 Hypothesis testing H<sub>03</sub>**

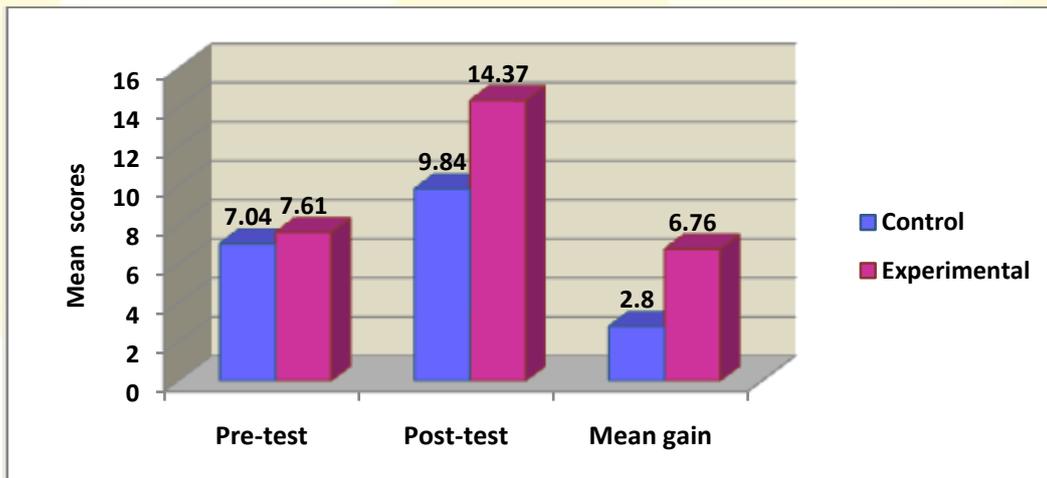
Descriptive statistics					t test for equality of means			Remarks
Independent variable	Dependent variable	N	Mean	Std deviation	Df	t Stat	P(T<=t) two-tail	
Innovative Teaching Ideas	Pre-test	100	7.61	2.23	99	-28.17	4.57305E-49*	Significant at 0.05 level of significance.
	Post-test	100	14.37	2.80				

\*0.05 level of significance

After giving the treatment through innovative ideas of teaching spanning 5 weeks, the MIT was again used to find whether the treatment had any effect on their performance. The (Table No.7) shows that the mean of pre-test score of innovative teaching ideas is 7.61 with 2.23 SD and the mean of post-test score of innovative teaching ideas is 14.37 with 2.80 SD. Whether the difference of mean is significant or not, the t-test is employed and after analysis it was found that (Table No.7) the calculated t (99) = (-28.17), P = 4.57305E-49\* (P < 0.05). So 't' is Significant and H<sub>03</sub> is rejected at 0.05 level of significance. So, that the hypothesis was not accepted.

**Table: 8 showing mean and mean gain of scores of control and experimental group**

SL No.	Group	Mean		Mean Gain
		Pre-test	Post-test	
1	Control	7.04	9.84	2.80
2	Experimental	7.61	14.37	6.76

**Figure: 3 Bar graph showing means and mean gain of scores of control and experimental group.**

The above (Figure:3) graph shows the mean score of control and experimental group in pre-test and post-test and from this scores graph also shows the mean gain score.

H<sub>04</sub> -There is no significant difference between the mean scores of effectiveness of Conventional method of teaching and Innovative ideas of teaching in correction of Misconceptions in Geography.

**Table: 9 Testing of Hypothesis H<sub>04</sub>**

Descriptive statistics					t test for equality of means			Remarks
Independent variable	Dependent variable	N	Mean	SD	Df	t Stat	P(T<=t) two-tail	
Conventional Teaching Method	Post- test for correction of misconceptions in Geography.	100	9.84	2.08	99	-12.97	8.20768E-22*	Significant at 0.05 level of significance.
Innovative Ideas of Teaching		100	14.37	2.80				

\*0.05 level of significance

The (Table No.9) shows that the mean of post-test score of control group i.e. conventional method of teaching is 9.84 with 2.08 SD and the mean of post-test score of experimental group i.e. innovative teaching ideas is 14.37 with 2.80 SD. Whether the difference of mean is significant or not, the t-test is employed and after analysis it was found that (Table No. 9) the calculated  $t(99) = (-12.37)$ ,  $P = 8.20768E-22^*$  ( $P < 0.05$ ). So 't' is Significant and  $H_04$  is rejected at 0.05 level of significant. So, the Hypothesis was not accepted.

$H_05$ . There is no significant difference between the mean scores of boys and girls of effectiveness of innovative ideas of teaching in correction of Misconceptions in Geography.

**Table: 10 testing of hypothesis  $H_05$**

Descriptive statistics					t test for equality of means			Remarks
Categorical variable	Dependent variable	N	Mean	Std deviation	Df	t Stat	P(T<=t) two-tail	
Girls	Post- test for correction of misconceptions in Geography.	32	14	2.65	99	-0.90	0.37*	Not Significant at 0.05 level of significance.
Boys		68	14.54	2.88				

**\*0.05 level of significance**

It can be observed (Table No. 10.) that the mean of post-test score of girls is 14 with 2.65 SD and the mean score of post-test score of boys is 14.54 with 2.88 SD. Whether the difference of mean is significant or not, the t-test is employed and after analysis it was found that (Table No. 10.) the calculated  $t(99) = (-0.90)$ ,  $P = 0.37^*$  ( $P > 0.05$ ). So, 't' is Not Significant and  $H_07$  is not rejected at 0.05 level of significance. So, that the hypothesis was accepted.

#### 4. Findings of the study:

1. The mean score of control group and experimental group in pre-test is found equal or not significant, which shows that there is same kind of misconceptions exist in learning Geography and both groups are equivalence.
2. The mean score of control group in post-test is higher than that of pre-test, which shows students conception are enhances considerably after conventional method of teaching.
3. The mean score of experimental group in post-test is higher than that of pre-test, which shows effectiveness of innovative teaching ideas. Students get clear concept after having treatment by innovative ideas of teaching.
4. The mean score of experimental group in post-test is higher than the post-test score of control group, which shows the effectiveness of innovative ideas than conventional method of teaching in correction of misconceptions in geography.
5. In correction of misconceptions Innovative ideas of teaching is found equally effective for Girls and Boys in post-test.

#### 5. Discussion:

In this study there is a prime objective to identify misconceptions in geography in VIII standard students, and after these identification students needs to correct their misconceptions or alternative conceptions. For this purpose investigator use an experimental setting between two groups. Therefore, the investigator selects quasi – experimental research design in this study. Investigator used a self-developed tool in this present study, i.e. Misconception Identification Test inventory. Tool is standardized by experts' and reliability measurement. To measure the significance of difference between means of experimental group and control group in pre-test and post-test, 't' – test is employed. Conventional method of teaching used to rectify students' alternative conceptions in geography for control group. Different Innovative ideas of teaching used for experimental group. And result shows that there is a direct relation between the methods used (innovative ideas of teaching) on cognitive process and students' test result after correction of misconceptions. Innovative ideas of teaching have results more effective for the experimental students. When experimental group sample is tested teaching effect through innovative ideas on the basis of Gender showed no significant difference between girls and boys. Result denotes that innovative ideas of teaching are equally effective for girls and boys.

## 6. Conclusion:

This study attempted to diagnose misconceptions in geography among VIII standard students' and MIT used as an assessment instrument. The main purpose of this research was to correct misconceptions of the content area in geography. After identifying misconceptions, two teaching methods are used to compare the effective teaching method in correction of misconceptions (Conventional method and Innovative ideas of teaching). Results of the study revealed that students of standard VIII held very firm misconceptions of the content area which was selected for the study. No gender differences were observed in students' MIT scores in teaching through innovative ideas.

Lastly, it can be concluded that misconceptions possessed by learners can be obtained from the learning outcomes at the previous level of education which explains that misconceptions obtained by someone from the previous education level will be retained up to college. So, the teachers have to be careful about removal of alternative conceptions by taking effective and useful teaching instructions. The factors causing misconceptions include no use of teaching-learning materials, instructional methods in teaching geography.

## 7. Implications of the Study:

Following are the educational implications of the present study,

1. Teachers can be used a diagnostic test or misconception identification test to identify the misconceptions of students of standard-VIII.
2. Innovative Ideas of teaching can be used to enhance cognitive knowledge and correcting the misconceptions of students of standard - VIII.
3. Innovative teaching ideas like (Hands on activity, real world learning, brainstorming questions, audio & visual tools) teaching regulation (Planning, Monitoring and Evaluation) can be used during curriculum transaction to enhance cognitive knowledge of students and also correcting the misconceptions of students.
4. Innovative ideas of teaching could be developed to students for their betterment of thinking, noticing, observing etc.
5. It can be used to change the right cognitive tool for the task and play an innovative role in successful learning of the students
6. While applying innovative teaching ideas to correcting the misconceptions, well organized questions needs to be asked as to lead students think logically and critically.

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