

Comparative Study of Concept Attainment Ability in Secondary School Students of Rural And Urban Areas

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ABSTRACT

Background: Concept attainment ability is that ability of any student on the basis of which he is successful in understanding various principles. This ability is basically influenced by the surrounding environment. Generally, there is a substantial difference in the environment and infrastructure of schools in urban and rural areas. Therefore, there is a possibility of developing a substantial difference in the development of a clear concept towards principles. There is a significant difference in the classroom environment, activity of laboratories and availability of physical resources, affecting the concept formation ability of secondary school students of urban and rural areas. The present study deals a comparative study between urban and rural area based on their environmental differences.

Methods: Descriptive research method has been used in the present research. Institutions have been taken as communities. In these, questionnaire has been used to collect information, on the basis of whose evaluation the information material has been tabulated and analyzed. All these procedures come under the category of survey research method. Therefore, the present research is survey type research.

Results:

1. The level of concept formation ability of intermediate students of urban area is normal.
2. The level of concept formation ability of intermediate students of rural areas is normal.
3. There is a significant difference in the concept formation ability of intermediate students of urban and rural areas.

Conclusion: The main motive of these finding concluded the significant difference between the concept formation ability of urban and rural students. Due to the difference in the family, social and economic status of students of rural environment and students of urban area, their concept formation ability gets affected.

Keyword: Concept formation ability, Urban School, Rural School, School infrastructure,

Date of Submission: 22-03-2023

Date of Acceptance: 05-04-2023

I. Introduction

Education is a social process, through which the all round development of a person takes place. All-round development refers to physical, mental and spiritual or moral development of a person. Education creates such a favorable environment for the individual, which proves to be helpful in the continuous development of the physical, mental and moral abilities of the individuals. The development of the child is also the result of education. In the context of education, all the development of the child is dependent on the school and its resources and environment. A child is like a blank paper in the beginning. With the passage of time, he first holds simple ideas in his mind and later on, by linking ideas with ideas, he increases his knowledge.

A small child first recognizes objects in their tangible form, but by constantly remembering that object with a particular word or thought, he does not make a definite term in relation to that object. This is called the concept of that child in relation to that substance. The child's concept can also be associated with a particular word, a particular idea or a particular event.

As the age of the child increases, he builds a big and complex concept by connecting small concepts together. Sometimes when he senses instability or immaturity in his concept, he goes on revising it.

For example, when a child learns by looking at a pet that it is a dog, then he knows that a dog has four legs, two eyes, one tail, two ears and white color. But initially his knowledge is limited to a particular dog. Then when the child sees different dogs, gradually a general idea related to dogs is formed in his mind. In this way, he learns to recognize dogs by distinguishing them from other animals. Gradually, the child starts formulating many questions related to the persons, objects and events present around him. In the process of generalization, the brain separates the specific properties inherent in individual images and integrates their common properties to form a general concept related to them. Clearly the child identifies himself with the word at the time of suffix

formation. With the development of concepts, the child finds he more capable of using more powerful tools such as thinking, reasoning, problem solving and more complex mental tasks.

The concept of students also demands some basic abilities. Which are reflected in these symptoms in the course of development? Ability to generalize Increase in the ability to generalize is a sign of proper development of the resolutions, knowledge of the abstract is derived from the concrete.

The ability to abstract knowledge the increase in the ability to understand abstract facts is another characteristic of the development of concepts. Instead of concrete objects, the child begins to understand symbols. First he learns that two plus two makes four apples. Later he realizes that two plus two is four. The ability to understand abstract facts is numerical and qualitative. The ability to understand well, evil, beauty, patience etc. is qualitative ability.

Ability to understand ideas

A child with a normal development of concepts has the ability to understand ideas without being involved. In 1942, Baker conducted a study to analyze the open behavior of children.

He found that 18 percent of sixth graders and 60 percent of second graders gave personal references.

Decision making ability

A child with normal development of wills has the ability to make decisions. Gradually he acquires the ability to differentiate between reality and ideal.

Ability to think in a broader context

A child with normal development of wills shows ability to think in a wide range

Problem solving ability

The general development of will is reflected in the ability to understand the problem. Ability to challenge prevailing ideals with the increase in conceptual development comes the child's ability to challenge the prevailing ideals. He does not blindly accept the prevalent customs.

Intellectual communication skills

The ability to interact intellectually with other people is another symptom of normal conceptual development.

Development of interest

An increased interest in understanding oneself and others is another characteristic of the normal development of wills.

Sense of moral convictions

The development of will in children is reflected in the ability to understand moral resolve and values. A child is immoral at the time of birth, he has absolutely no knowledge of morality. In this way, we can say that concepts are important links in thought chains and if concepts are immature or confused in the process of discussion, the flow of thought can migrate in the wrong direction.

Concepts also create restraint in reasoning and problem solving. Concepts are widely used in mathematics and semiotic logic etc. If there is any error in the construction of some basic concepts which are essential for every student, then there is every possibility of the student's thinking being impure. Being the main basis of their semiotic behavior, concepts play a major role in organizing knowledge. As a result of which, instead of giving details of each substance, the use of general ideas becomes easy and restrained.

How important concepts are to students can be seen in the context of math's class. As soon as the symbol of the square is put, such a figure is formed in the mind of the student in a moment, whose four sides are equal. With the concept of solar eclipse or lunar eclipse, the student can easily concentrate on the relative positions of the Earth, the Sun and the Moon, and by successfully using them in the flow of thoughts, achieves his desired goal. Concepts have special importance for the students because the study of science, arts and other subjects can be possible only when the student has a set of basic concepts. In general, children up to pre-secondary age go through the phase of formation of basic concepts. The real test is in the secondary or above secondary classes. Where derived and complex concepts are formed in understanding subjects, events and mathematical contexts prior research shows those children.

Form the government, follow the present. It moves from concrete to abstract and from simple to complex. First the child grasps the concept of man or woman, then of mango or apple. If a student is successful in making a universal and definite concept in the context of any material event or idea, then there is an expected increase in the student's thought flow and thinking capacity. Most of the concepts that children develop in early childhood or late childhood are fully or partially accurate. On entering adolescence, they develop many types of concepts and refine many original concepts and add new meaning to old concepts. According to Robinson, concept development is a complex process, yet if special attention is paid to three factors in the development of any concept by children, then the development of the concept becomes much easier.

Ability to see relationships accurately

According to Robinson, for concept development in children, it is necessary that they have sufficient ability to establish relation between their old experiences and new experiences. This type of ability begins to develop in children as early as 1 year of age. At any age, when a child finds that there are many experiences in new objects and such that are in accordance with his past experience, then the development of concepts is rapid.

The ability to understand the meaning behind words

Often children understand the direct meaning of a word or sentence but do not understand the subtle or figurative meaning. This slows down the process of their concept development. Concept development is rapid in children who have sufficient amount of such capacity. Therefore, the second important step for concept development is that children have the ability to understand the figurative meaning of words in addition to their literal meaning.

Ability to think realistically

For conceptual development in children, it is also necessary that children should understand what they are seeing or hearing properly and should be able to think about it. Apart from this, children should have the ability to do inductive deductive thinking and creative thinking. When these abilities are there, the development of concepts in children is rapid. Because such abilities develop slowly in children, the process of conceptual development in children is slow.

ORIGIN OF THE PROBLEM

According to Sarasan, the more stimulating and educational the environment is, the more the children's are understanding power increases and the development of concepts takes place faster. When they start going to school, the more educational opportunities are provided to the children by the school, the more thinking and understanding develop in them. There is a lot of disparity between rural and urban schools in terms of educational gap. Therefore, the educational results of the students of rural and urban areas are also affected. This difference is clearly visible in the examination results and other activities. Apart from this, socio-economic factors have an important influence in the conceptual development of children, because there is a substantial difference in the social and economic conditions of the students of rural and urban environment, therefore, there is a difference in the concepts adopted by them.

Concepts such as motor vehicle, telephone, bungalow, servant, maid, fridge etc. are generally developed in the children of families with higher mean social status because all these things are not used in families of lower social status. Secondary schools in rural and urban environment

Inequalities in opportunities, environmental conditions, and practical tasks to gain experience in learning also lead to deep disparities in students' concept formation abilities.

Apart from this, some educational activities also create a difference in the concept formation ability of children, which are as follows-

1. Giving more examples- We should give more examples to the students to confirm the concept. It is often seen that urban schools being resourceful are quite capable of using practical tests and concrete examples while rural schools remain backward in this.

2. Lack of resources- Lack of resources also creates a difference in the concept formation ability of the students of rural and urban areas.

3. Attitude of the parents- There is a substantial difference in the educational outlook of the parents of rural and urban areas which affects the conception of the students.

It is clear that the above activities in the school are helpful in strengthening the concept of the students and it is also a fact that there is a huge difference in the above educational activities in the schools of rural and urban areas. Therefore, it becomes absolutely necessary to study this difference. The present research is an attempt to shed light on this problem and an attempt to go to the bottom of concept formation ability in urban and rural students.

4. Problem Statement-Comparative study of concept formation ability of secondary school students of rural and urban areas.

DEFINITION OF VARIABLES

Urban secondary school- Urban secondary schools are secondary schools in urban areas which provide education up to class 12 and are run by private or public agencies.

Rural secondary school- Rural secondary schools are those secondary schools in rural areas which provide education up to class 12 and are run by private or public agencies.

Concept formation ability - When a student, when an idea or object comes in front of him, reflects it with his previously made images, then it is considered to be a concept for that student. That is, if on seeing a chair, the

student tries to associate it with the concept of the chair in his mind, then it comes under the attainment of the concept. Concept formation takes place in the absence of any predetermined concept in children. Children have a tendency to respond first to the total stimulus situation and not to any one part of it. The result is that children first develop a vague concept, later their level of cognitive development increases, and then their ability to concentrate on a particular part of the stimulus and think about it increases. As a result, he develops a clear and distinct concept.

In this way, the ability of a student to get a concept is called his concept formation ability. The sooner a boy or girl creates a concept in his/her mind, the higher his/her concept formation capacity is.

OBJECTIVES OF THE STUDY

In fact, the factors which influence the concept, substantial disparities are found in those factors in urban and rural areas. Based on this, the following objectives of the study have been set-

1. To study the concept formation ability of intermediate students of rural areas.
2. To study the concept formation ability of intermediate students of urban area.
3. To make a comparative study of concept formation ability of intermediate students of urban and rural areas.

CONCEPT OF THE PROBLEM

The purpose of any research is to answer some questions. There are some such things, facts and relations about which the goal of research is to know. In research, the more clearly the subject is divided into questions, the more success is achieved in understanding the subject. He also gives ad hoc answers to the questions that the researcher asks for himself on the research topic. These answers are those interim, preliminary or experimental statements which according to the researcher are the answers to the questions which are to be decided by this research on the basis of knowledge, logic, experience etc. obtained at that time. After that, with the help of given material, thinking, logic etc. in the research, the researcher gets involved in whether those answers are correct or not. By accepting or rejecting the answers to these questions, theories and conclusions are made as the conclusion of the research. These tentative answers are called HYPOTHESES. The rest of the research process depends on these hypotheses. The null hypothesis has been used in the present research, the explanation of which is as follows.

Null hypothesis – This is a special type of hypothesis according to which the relationship between the technical terms of the hypothesis is zero. This hypothesis is one of the decision-making methods of inferential statistics (statistics in which the hypothesis is generalized from the sample to the population). Therefore it is an important part of the research. According to the null hypothesis, whatever the difference is, it is zero, it is insignificant from the point of view and it is negative.

The following are the research hypotheses of the presented research study

1. The level of concept formation ability of intermediate students of rural areas is normal.
2. The level of concept formation ability of intermediate students of urban area is normal.
3. There is no significant difference in concept formation ability of intermediate students of rural and urban areas.

NEED AND IMPORTANCE OF STUDY

The need for the present study appeared because the problems and educational needs of people living in rural and urban areas are different. For their personal and social development, it is necessary to study their problems and needs separately. Since concept formation ability is the central feature of a person's or a student's overall thinking, due to immaturity in concepts or wrong concepts, the students' academic performance remains low despite having high level of other abilities like intelligence, thinking ability etc. This deficiency eventually makes the rural students stand behind the urban students. Therefore, it seems expedient to study this problem in order to find out the facts and confirm the doubt that one of the main reasons for rural students' academic performance being less than urban students is the difference in their concept formation ability.

If these findings can be proved then the relevance of the research will remain and in future these findings can be used to improve the thinking power of the students. The present study is one such attempt.

EDUCATIONAL SIGNIFICANCE OF STUDY

From the educational point of view, the relevance of the present study can be significant in that both rural and urban areas have been compared on the basis of factors affecting educational outcomes. Therefore, it becomes important to control the factors that increase or decrease the variable on which the present study has been done. In the present study, the variable called concept, which has been studied, actually has an important contribution in any student's thought exchange, thinking and mental operations.

The facts obtained from the studies done by McGhee (1988) and Tizzard (1989) suggest that the development of children's concept of place is greatly influenced by their education initiation and home

environment. The concept of place develops rapidly in children whose education is good and the home environment is stimulating. Apart from this, the factors which affect the child's self-concept include the state of the senses, intelligence, educational opportunities, experience, sex, personality and social status. At all these levels, there is a difference between schools in rural and urban areas. An attempt has been made to study this difference in the present research. These findings would be helpful in clarifying the difference in concept formation ability in rural and urban areas. Therefore, it is the belief of the researcher that the findings obtained from the comparative study of the concept in rural and urban areas will motivate the society to provide equality to both the areas.

Concept acquisition is such an educational variable that always creates new images to increase the thinking capacity of the child. Equality of educational opportunities, sufficient difference in environment and guidance and resources also sheds important light on the ability of students of rural and urban areas to understand the subjects.

Therefore, the present study will help in understanding the difference between rural and urban students in concept formation ability and will help in reducing the educational disparity between rural and urban students.

LIMITATION OF THE STUDY

The area of study of the presented research work is district Gonda. Concept attainment was measured by testing intermediate students of secondary schools of rural and urban areas located in the same district.

The following facts were taken into account in the study:

1. The study covered 5 rural and 5 urban higher secondary schools.
2. Both male and female students were included in the study.
3. The study included only intermediate students run by the Board of Secondary Education.

II. DESCRIPTION OF RELATED LITERATURE:

INDIAN STUDIES:

Dr. Manjula P. Rao¹ in her research paper 'Effect of Concept Mapping in Science Achievement Cognitive Skills and Attitude of Students' studied the attitude of students towards concept mapping, science achievement, and skill process and concept design. In this form, a total of 89 students of class 8 were taken, who were divided into two groups (47, 42) experimental and control. Ravin's matrix test was used on the basis of the intellectual ability of the students. Concept acquisition test was automatically created based on the syllabus of the selected students. As a result, it was found that the performance of the experimental group of students was better than the control group in terms of performance test, skill processing and concept acquisition test. Apart from this, 90 percent of the students of the experimental group had a positive attitude towards the concept design. There was no significant difference between boys and girls on the basis of attitude towards concept design, achievement, and skill process and concept acquisition. Based on these results, it is concluded that there is a need to link the conceptual design to the structural basis.

Mukhopadhyay (1989)² did a research on the effect of school environment and studies on the development of some personality characteristics of secondary school students and teacher achievement. The objectives of the study were- (1) to identify the determinant factors of school environment. (2) To study the effect of school environment on the academic achievement of students. The study found that. (1) On the basis of nine determinants, six distinct organizational climate types were identified. (2) Among the nine determinants of school environment, the relationship between the headmaster and the staff, the administrative ability of the head of the institution, job satisfaction of the teachers and the physical facilities of the school were found to be the major factors.

Nanda and Pannu (2005)³ studied 'Emotional stability and socio-personal factors'. The objectives of the study were-

1. To establish the relationship between education of parents and emotional stability of children.
2. To determine the relationship between occupation of parents and emotional stability of children.
3. To establish the relationship between family size and family type and emotional stability of children.

The major findings were

1. Mothers of children who showed higher emotional stability had higher education at the post-graduate level. Whereas higher percentage of mothers of children exhibiting low emotional stability had less than high school education.
2. There was no significant association between emotional stability and occupation of mothers. Mothers in the high emotional stability group were skilled housewives, while mothers in the low emotional stability group worked exclusively.
3. The group showing high emotional stability belonged to joint family whereas children with low emotional stability belonged to nuclear family.

STUDY ABROAD:

Yuruk and Nejlâ (2009)⁴ in their research "Analyzing the effect of force and motion concepts" studied 45 high school students in one of two classrooms taught by the same science teacher. Practical students were given ample opportunity to participate in co-curricular activities. They were kept engaged in activities like poster drawing, form writing, group debates, concept building and class and group discussions. As a result, it was seen that their interest increased in creating new concepts, in bringing changes in ideas and in establishing relation between new and old concepts. On the contrary, those students who were taught by the same teacher in the second class and used traditional methods like laboratory method, demonstration method etc. could give less performance as compared to them.

In their research "Concept Process Interactions in Children's Addition and Subtraction", **Canoby and Catherine (2009)**⁵ attempted to explore the interactions of children's concept processing during a three-week problem solving practice session. He did his experiment on a total of 72 students whose age was between 7-8 years. The students were tested on addition and subtraction. In his research, Canobi pointed out that there is a correlation between the problem solving ability and concept formation ability of the students. After the test, it was seen that the concept formation process of the students was positively affected in the context of new and unusual concepts in this type of controlled environment.

Savinainen and Jauni (2008)⁶ used a test Force Concept Inventory in their research "The Force Concept Inventory as a Measure of Student Conceptual Coherence". The test consisted of multiple choice questions to test the students' conceptual understanding of forces and dynamics. This test was administered to two groups of 49 Finnish high school students and an attempt was made to find out their conceptual coherence with the concept of force. This test was specially used for force concept. The findings obtained from this study were later used for remedial teaching.

Weimar (2009)⁷ in his study "The development of automatic associative processes and children's false memories" explored how children's development of concepts and their associations are affected. In this study, 5, 7 and 11 year old children were taken. They were given two types of tests, one was simple concept and the other complex. It was found that children who had prior knowledge of words did not face any problem in understanding the concept. This proved that concept formation is a knowledge-based process and for its development, knowledge of the words associated with the concept is necessary. In its absence, wrong concepts can develop in children.

Wilhelm and Jennifer (2009)⁸ in their study "Gender Differences in Lunar Related Scientific and Mathematical Understandings" attempted to measure conceptual understanding on the basis of gender. This study was conducted on 123 students, of whom 70 were girls and 53 were boys. These students were made to study the phases of the moon with the help of orbits, observations, sketches, two-dimensional and three-dimensional models. These methods were taken from the Realistic Explorations in Astronautical Curriculum. After the study, the conceptual understanding of the students was measured with the help of pre- and post-tests. The results of the tests proved that both male and female students got meaningful concepts. It was also found that the conceptual understanding of the science field was more developed in the students. While the concept understanding of mathematics field was found more in female students. This proved that methodical and focused teaching system produces meaningful and positive effects in concept formation.

Michael and Friedländer Alex (2009)⁹ in their work 'The Money Context' studied teaching methods, concept formation and mathematical skills in the context of semantic mathematical concepts on secondary school children. In the process of learning mathematics of students, rules and procedures of mathematics on one hand and concepts and principles on the other hand play different roles. In mathematical operations, the application of procedure and the understanding of concepts are two different aspects. Coincidentally, many math teachers are thinking of these two sides as one, they consider them complementary to each other and not contradictions. As a result, teachers recommend that learning of rules and procedures be hands-on. Must have a good understanding of the task, flexibility in solving methods and the ability to justify the process used. This article explains how children's learning process and concepts can be enhanced through Algebra.

Alson and Janni K. (2009)¹⁰ in their paper "Methods and Strategies: Being Deliberate about Concept Development" stated that in order for children's tested experiences to be transformed into concepts, teachers must seriously remove misconceptions. In his research, he worked on two groups of 75 students each. The first group was given instructions about the experiences from time to time. The second group was given a chance to learn on its own without any instructions. It was found that misconceptions were more in the second group than in the first group.

O'Hair Annie (2009)¹¹ O'Hair Annie was a clinical assessment instrument involving children ages 5 to 12 in an advanced theory of intellectual groups performance. In this, strange stories of Happa were told to the children. It was observed that different age groups differ in story discrimination.

Butler, Keel and Andrew (2008)¹² studied the role of computer scaffolding software in students' motivation and conceptual understanding in their research "Student use of scaffolding software: relationships with motivation and conceptual understanding". To demonstrate the higher cognitive functions of the students in this project. Many educational software have been developed. Artemis software was used in this study which focused on student learning through scaffolding methods. In this, the students used to demonstrate the learned information in a practical way. The researcher used a pre-designed test which was based on the motivation and conceptual understanding of the students. In this study, it was found that the scores obtained from the dependent variables were correlated with the student's working behavior and problem solving ability. A significant correlation was found between student's self-efficacy in problem solving and learning and performance. A significant correlation was found between the search characteristics of the students and the solving ability of the students to complete the task. A significant correlation was found between doing a task in a cooperative manner and the essay performance score of the students. Correlation was found between qualitative analysis of time management trait and concept model.

Hopwood and Nick (2009)¹³: In their research "U.K. In High School Pupils' Geography: Research Findings and Methodological Concepts of Implications" it was proved that there is a significant relationship between students' concepts of geography and their learning methods. Concepts become more concrete with the use of learning methods. This experiment was done on 13-14 year old children of secondary level. The selected people were interviewed several times in the classroom and in general and it were found that their concepts develop well with the use of learning methods.

III. CONCLUSIONS OBTAINED FROM THE STUDY OF RELATED LITERATURE

The intellectual efficiency of these students also depends a lot on the training, environment and teaching processes. With the help of new educational strategies and educational technology, the conceptual capacity of the students increases exponentially and even a normal student can give high academic performance. Apart from this, correlation is also found between the student's work behavior and solving ability. There is a significant correlation between student's self-efficacy in problem solving and learning and performance. There is a significant correlation between the search characteristics of the students and the solving ability of the students to complete the task. There is a significant correlation between doing a task in a cooperative manner and the essay performance score of the students. There is a correlation between qualitative analysis of time management trait and conceptual design. In this way, it is seen that various external factors affect the conceptual ability of any student, due to which there is a difference in the different abilities of the student. There have been subject-wise studies on conceptual ability, but no study has been done on any population collectively. Comparative study of any group with other group has not yet been done. This is the first attempt to make a comparative study of the concept formation ability of students from rural areas with the concept formation ability of students from urban areas. The present study is referred to this.

RESEARCH METHOD

Descriptive research method has been used in the present research. Descriptive research mainly only describes the phenomenon, situation, institution or any feature. In the present research, samples have been taken from two different communities on a temporary basis. In these institutions have been taken as communities. In these, questionnaire has been used to collect information, on the basis of whose evaluation the information material has been tabulated and analyzed. All these procedures come under the category of survey research method. Therefore, the present research is survey type research.

POPULATION OF STUDY

In the present study, students of higher secondary class of rural and urban areas coming under Gonda district have been taken as finite population.

SAMPLING

For research, a certain number of members or objects are selected from the population. This selected population is called a sample in behavioral research. For the present research, 5 rural and 5 urban secondary schools have been taken in the sample. The samples of students are taken from both science and arts stream. Simple Random Sampling: Simple random sampling is a major type of probability sampling. It is called such sampling in which the possibility of inclusion of each member of the population is equal and independent. According to Guilford, "It is a method of selecting individuals from a population in which each individual in the population has an equal chance of being selected." The selection of any one person is not in any way related to the selection of any other person. Thus simple random sampling has the following two main characteristics: 1. Equal Probability: In this type of sampling, all the members of the population have an equal chance of being included in the sample or selected. 2. Independence: In this type of sampling, the selection of any member of the

population is neither affected by the selection of another member nor affects the selection of another member. The simple random sampling method of probability sampling has been used in the present research. In this way, the schools which were obtained as a sample are as follows:

Sr. No.	Name of the School	No.of Samples	
1	Gayatri Vidya Mandir Inter College, Maskanwa	40	
2	Shree Swami Narayan Inter College, Chhapia	40	
3	Dada Karan Singh Inter College, Kudasan	40	Rural
4	A P Inter College , Mankapur	40	
5	Waliuddin Inter College, Bhopatpur	40	
6	Thomson Inter College, Gonda	40	
7	Marwar Inter College, Gonda	40	
8	G I C, Gonda	40	
9	G G I C , Gonda	40	
10	Gandhi Vidya Mandir Inter College, Gonda	40	Urban

DETAILS OF RESEARCH EQUIPMENTS USED

In the present research study, to measure the conceptual ability of the students of secondary level, “**CONCEPT ATTAINMENT TEST**” PREPARED BY SMT. ANURADHA JOSHI AND RATNAMALA ARYA” has been used. This test is divided into four parts and for each part there are different instructions according to the posts. After ascertaining the validity and difficulty level of each item and according to Garrett only items above validity have been included.

Scoring: In each item of each section, options are given as per instructions. Whose evaluation has been done by the following table.

Part I		Part II		Part III		Part IV	
Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.
1	D	1	D	1	C	1	C
2	C	2	D	2	C	2	B
3	C	3	E	3	B	3	B
4	A	4	A	4	B	4	C
5	B	5	C	5	C	5	A
6	B	6	B	6	C	6	B
7	A	7	C	7	A	7	C
8	A	8	C	8	C	8	C
9	C	9	C	9	C	9	B

One mark awarded for each correct answer

Reliability of the instrument: The reliability coefficient of this test when administered to 90 students by test-retest method was estimated to be 0.74. A gap of 30 days was kept to determine this type of reliability. Thus the instrument is reliable as the reliability coefficient is sufficient. The reliability coefficient of the above instrument was found to be 0.72 by the split-half method, which is sufficient.

MEAN (D)

The mean value has been used to find out the average of the concept attainment of the students as well as it has also been used to calculate the t-ratio.

$$M = A + \frac{\sum fd}{N} . i$$

Where . = assumed mean

p = class frequency

k = square deviation

g = total frequency

p = class interval

Standard Deviation (SD): Standard deviation has been used to find out the significance of the difference between the mean values of the group.

$$s. d. = i. \sqrt{\frac{\sum fd^2}{N} - \left\{ \frac{(\sum fd)^2}{N} \right\}}$$

Where

f = frequency of different classes

d = assumed mean

N = total frequency

i = class interval

χ^2 test

Chi square has been used to know the nature of distribution of scores.

$$\chi^2 = \sum \left[\frac{(f_o - f_e)^2}{f_e} \right]$$

where χ^2 = chi square
 \sum n = sum

f_o = received or measured frequency

f_e = expected frequency

T-test

The t-test or ratio is an important parameter statistic to test the significance of the difference between two means. Apart from this, it is used to check the significance of Pearson's R, score bilinear correlation, rank difference correlation etc.

In fact, the T-ratio is a ratio of the difference between two means and the standard error of this difference. The significance of the difference between two sample means is tested by t-test using the following formula.

$$t = \frac{M_1 - M_2}{\sigma_d}$$

where t = t - test

M_1 = mean of a sample

M_2 = mean of the second sample

σ_d = standard error of the difference between the two sample means

No importance is given to the sign in finding the difference between D_1 and D_2 . That is, less is subtracted from more. Since the t-test is a parametric statistic, it is essential, especially in situations where the sample size is small and the data are such that they satisfy at least two of the following assumptions:

1. The distribution obtained from both the samples should be normal. Therefore, the researcher should use appropriate statistics to see whether the distribution is normal or not.
2. There should be homogeneity of variance in the distribution of scores obtained from both the samples. By variance is meant x^2 . Homogeneity of variances means that the variances of the two groups are almost equal. i.e. x^2 of first group = x^2 of second group

The use of h test is maximum in the following three types of situations

1. When both the groups whose mean difference is to be tested for significance are independent.
2. When both the groups whose mean difference is to be tested for significance are correlated.
3. When both the groups whose mean difference is to be tested for significance are matched. The basis of this matching can be either the mean or the standard deviation of both the groups.

PRESENTATION AND ANALYSIS OF DATA

The objectives of each research work are fixed and according to these the collected facts are presented. The problem of the presented research work is as follows:

"Comparative study of concept formation ability of intermediate students of secondary schools of rural and urban environment" According to the above mentioned problem, the researcher has carefully collected the relevant data through various tools and presented, analyzed and interpreted them as follows:

TESTING OF HYPOTHESES

TESTING THE FIRST HYPOTHESIS:

H₁: The level of concept formation ability of intermediate students of urban areas is not normal.

H₀₁: The level of concept formation ability of intermediate students of urban area is normal.

Chi-square test was used to test the above null hypothesis and the results obtained are presented in table no. 4.2.1.

Table No. 4.2.1.

class interval	5-9	10-14	15-19	20-24	25-29	30-34	Total
frequency	6	25	58	80	28	3	200

Table No. 4.2.2.

class interval	frequency f	high limit M	X-M	$Z = \frac{X-M}{S}$	cumulative percentage frequency	percentage frequency f%	frequency $f_e = Nf\%$	
30-34	3	34.5	14.9	2.99	100	2.33	4.66	
25-29	28	29.5	9.9	1.99	97.67	14.02	28.04	
20-24	80	24.5	4.9	0.98	83.65	34.45	68.90	
15-19	58	19.5	-0.1	0.02	49.20	33.81	67.62	
10-14	25	14.5	-5.9	-1.02	15.39	13.27	26.54	
5-9	6	9.5	-10.1	-2.03	2.12	2.12	4.24	
i=5	N=200	M=19.6	S=4.97			%=100	N=200	

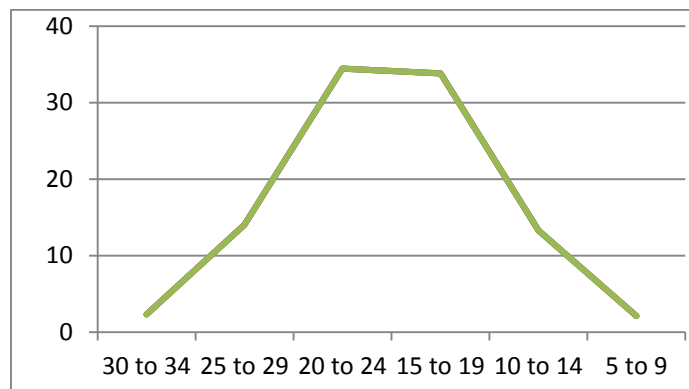


Table No. 4.2.3.

class interval	frequency f_0	f_e	$f_0 - f_e$	$(f_0 - f_e)^2$	$(f_0 - f_e)^2 / f_e$
30-34	3	4.66	-1.66	2.7500	0.590
25-29	28	28.04	-0.04	0.0016	0.000
20-24	80	68.90	11.10	123.2100	1.788
15-19	58	67.62	-9.62	92.5444	1.368
10-14	25	26.54	-1.54	2.3716	0.089
5-9	6	4.24	1.76	3.0976	0.730
i=5	N=200	N=200			$\chi^2 = \sum \frac{(f_0 - f_e)^2}{f_e} = 4.565$

$\chi^2 = 15.086$ at $df=5$ in the table

Since the calculated value of χ^2 is less than the table value, hence the null hypothesis is accepted. That is, the level of concept formation ability of intermediate students of urban area is normal.

TESTING THE SECOND HYPOTHESIS

H₂: The level of concept formation ability of intermediate students of rural areas is not normal.

H₀₂: The level of concept formation ability of intermediate students of rural areas is normal. Chi-square test was used to test the above null hypothesis and the results obtained are presented in table no. 4.3.1.

Table No. 4.3.1.

class interval	5-9	10-14	15-19	20-24	25-29	Total
frequency	2	31	86	63	18	200

Table No. 4.3.2.

class interval	frequency f	high limit M	X-M	$Z = \frac{X-M}{S}$	cumulative percentage frequency	percentage frequency f%	frequency $f_e = Nf\%$
25-29	18	29.5	10.9	2.57	100	8.23	16.46
20-24	63	24.5	5.9	1.39	91.77	33.45	66.90
15-19	86	19.5	0.9	0.21	58.32	41.47	82.94
10-14	31	14.5	-4.1	-0.96	15.85	15.27	30.54
5-9	2	9.5	-9.1	-2.15	1.58	1.58	3.16
i=5	N=200	M=18.6	S=4.23			%=100	N=200

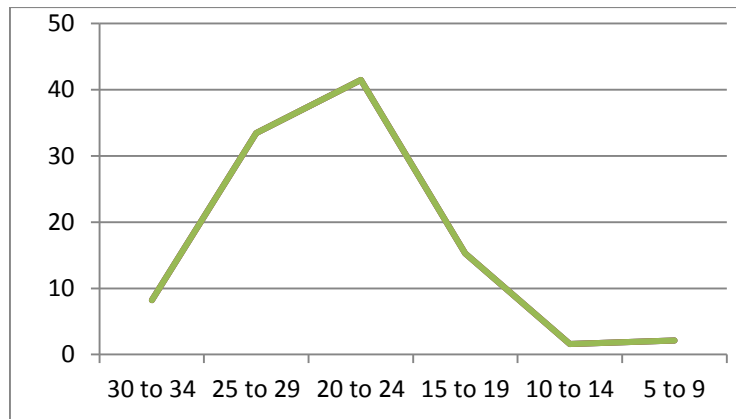


Table No. 4.3.3.

class interval	frequency f_0	f_e	$f_0 - f_e$	$(f_0 - f_e)^2$	$(f_0 - f_e)^2 / f_e$
5-29	18	16.46	1.54	2.37	0.1439
20-24	63	66.90	-3.9	15.21	0.2273
15-19	86	82.94	3.06	9.36	0.1128
10-14	31	30.54	0.46	0.21	0.0068
5-9	2	3.16	-1.16	1.34	0.4240
i=5	N=200	N=200			$\chi^2 = \sum \frac{(f_0 - f_e)^2}{f_e} = 0.9148$

$\chi^2 = 13.277$ at $df=4$ in the table

Since the calculated value of χ^2 is less than the table value, the null hypothesis is accepted. That is, the level of concept formation ability of intermediate students of rural areas is normal.

TESTING OF THE THIRD HYPOTHESIS

H₃: There is a significant difference in the concept formation ability of intermediate students of urban and rural areas.

H₀₃: There is no significant difference in concept formation ability of intermediate students of urban and rural areas.

't' test was used to test the above null hypothesis and the results obtained are presented in Table No. 4.3.1.

Table No. 4.3.1.

S.N.	Variable	Number (N)	Mean (M)	Standard deviation (SD)	't' Value	Conclusion
1	Intermediate students of Rural areas	200	18.64	4.23	2.19	Significant
2	Intermediate students of Urban areas	200	19.65	4.97		

It is clear from the observation of Table No. 4.3.1 that the calculated value of 't' is 2.19 which is more than the tabular value of 't' 1.97 at the level of significance 0.05 and 398 means that the difference between the means is

significant. So null hypothesis is rejected and research hypothesis is accepted. This means that there is a significant difference in the concept formation ability of intermediate students of urban and rural areas.

IV. CONCLUSION

The main objective of the present research work is to make a comparative study of the concept formation ability of secondary level students in two different areas rural and urban.

In this study, secondary level rural and urban students are taken as population and by simple random sampling method having 200 students are selected from both rural area and urban area.

To measure the concept formation ability of the students, "Concept Attainment Test" prepared by **Smt. Anuradha Joshi and Ratnamala Arya** was used. The reliability coefficient of this test was 0.74. The reliability coefficient of the above instrument was 0.72 by the split-half method. The concurrent validity of this instrument was equal to 0.42. Survey research method was used in the present study.

In this research work, an attempt was made to achieve the following objectives.

1. To study the concept formation ability of intermediate students of rural areas.
2. To study the concept formation ability of intermediate students of urban area.
3. To make a comparative study of concept formation ability of intermediate students of urban and rural areas.

THE FOLLOWING RESULTS WERE OBTAINED FROM THE STUDY

1. The level of concept formation ability of intermediate students of urban area is normal.
2. The level of concept formation ability of intermediate students of rural areas is normal.
3. There is a significant difference in the concept formation ability of intermediate students of urban and rural areas.

INTERPRETATION OF FINDINGS

It is clear from the first two findings that the distribution of students from both urban and rural areas is normal on the basis of concept formation ability in different population. But in comparison there is a significant difference between these two groups. It can be said that the concept attainment in the students is equal to the normal probability curve, that is, it is not the same, but on a comparative study between rural and urban areas, it is known that there is a difference between these two. Since the level of concept formation ability of the students of urban and rural areas is equal to the normal probability curve, it can be said that the distribution of concept formation ability in the rural area is in the same proportion as in the urban area, but both these proportions are different. On establishing the relationship among them, we come to know that the concept formation ability of the students of rural and urban areas is not equal. The third conclusion is regarding the significant difference between the concept formation ability of urban and rural students. Due to the difference in the family, social and economic status of students of rural environment and students of urban area, their concept formation ability gets affected.

There is a lot of disparity between rural and urban schools from this point of view of educational difference. Therefore, the academic results of the students of rural and urban areas are also affected.

EDUCATIONAL SIGNIFICANCE OF THE STUDY

The facts obtained from the studies conducted by McGhee (1988) and Tizzard (1989) show that the development of children's concept of place is greatly influenced by their education initiation and home environment. The concept of place develops rapidly in children whose education is good and the home environment is stimulating. Apart from this, the factors which affect the child's self-concept include the state of the senses, intelligence, educational opportunities, experiences, sexual personality and social status. At all these levels, there is a difference between schools in rural and urban areas. An attempt has been made to study this difference in the present research. These findings would be helpful in explaining the difference in concept formation ability in rural and urban areas.

V. SUGGESTIONS FOR FUTURE RESEARCH

1. By expanding the scope of the presented small research management, study can also be done at the circle level.
2. In the future study, a comparative study can also be done between all the three faculties (Arts, Science, and Commerce).
3. Secondary level schools have been included in the present study. Higher level schools can also be researched under this title.
4. By referencing various variables with concept formation capability, their mutual relations can be studied.
5. Research can also be done on this variable under controlled conditions.

References

- [1]. Rao Manjula P. effect of concept mapping in science achievement cognitive skills and attitude of students, journal of regional institute of education, Maisur, page 2-8
- [2]. Mukhopadhyaya, Dilip kumar (1989) A study of the influence of environment on the development of some personal characteristics and academic achievement of secondary school students, PhD. Education, Vishwabharti University.
- [3]. Nanda,P. and Pannu (2005) emotional stability and socio-personal factors ; Indian journal of psychometrics and education.
- [4]. Yuruk and Nejla, analyzing the effect of force and motion concept, research in science education,
- [5]. Canoby and Catherine H (2009), concept procedure interactions addition and subtraction, journal of experimental child psychology.
- [6]. Savinainen and Jauni (2008), the force concept inventory as a measure of student's conceptual coherence, international journals of science and mathematics education.
- [7]. Weimar (2009), The development of automatic associative processes and children's false memories, Journal of experimental child psychology.
- [8]. Wilhelm and Jennifer (2009),Gender Differences in Lunar Related Scientific and Mathematical Understandings, international journal of science education.
- [9]. Michael and Friedlander Alex (2009), Mathematics teaching in the middle school.
- [10]. Alson and Janni K. (2009),Methods and Strategies: Being Deliberate about Concept Development, Science and children.
- [11]. O'Hair Annie (2009): Journal of Austin and development disorders.
- [12]. Butler, Keel and Andrew (2008): Student use of scaffolding software: relationships with motivation and conceptual understanding, Journal of science education and technology.
- [13]. Hopwood and Nick (2009):U.K. High School Pupil's conceptions of Geography: Research Findings and Methodological Concepts of Implications, international research in geographical and environmental education.

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19	14	24	11	14
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17	11	18	16	27
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19	17	16	20	22
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20	21	23	16	21
16	15	9	20	21
15	23	21	15	25
11	23	13	20	25
21	23	11	19	27
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13	29	20	21	22
17	26	16	23	10
	19	18		16

I, Mahesh Chandra, declare that the research paper presented on "Comparative study of concept formation ability in secondary school students of rural and urban areas" is my original work.

Mahesh Chandra. "Comparative Study of Concept Attainment Ability in Secondary School Students of Rural And Urban Areas." *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 13(02), (2023): pp. 14-27.