

Study Based On Cognitive Ability Of Students In Blended And Traditional Learning In High Schools Of Raipur District

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ABSTRACT

This research study aims to compare high school students' educational accomplishments between blended learning and traditional learning through their cognitive engagement cognitive ability of a student is crucial to the learning process because it motivates students to remain attentive in class and gain a deeper comprehension of subject matter. When students and teachers alike grasp this concept, education as a whole benefits. The importance of mode of learning in empowering teachers and learners, and enhancing cognitive ability of students and academic achievement has been highlighted in several studies. This study assessed cognitive ability of students of Raipur towards different modes of learning. To achieve the goal of the study, the researcher has used a standardized tool on Study Cognitive Ability developed by Dr.Madhu Gupta and Bindiya Lakhani. A survey was conducted on 500samples selected from 12 schools in Raipur, through simple random sampling technique. The results Showed that most of the student are improving their cognitive ability through Blended Learning. It was found that there was no significant difference between urban and rural school students on their level of learning based Cognitive ability .So, rural and urban both have equal cognitive ability and it was also found that there was no difference between Hindi and English medium students on their level of learning based cognitive ability .

KEYWORDS: Blended learning, Traditional learning, Cognitive ability

INTRODUCTION:

Learning is effective when all the doubts of students present in the class are resolved. According to Sellah et.al (2017) Cognitive ability is a period used to describe the way individuals observe, reflect and recall information. Cognitive ability as a concept is a component of a greater concept termed as learning ability. Learning ability highlight characteristic cognitive, affective and psychomotor behaviors displayed by an individual as they learn. Cognitive ability of a different can be measured from their retort to physical and psychological stimuli and have both internal and external constructions. Internally, they are structured contents of supposed and knowledge in one's mind. Therefore, cognitive ability influence choices and selections made by both the learner and the teacher through teaching and learning.

Cognitive Ability

Cognition is a general term used to define various aspects of higher mental processes like thinking, reasoning, decision making, memory and problem solving (Robert A. and Baron 2000). The information coming from the senses is altered, reduced or elaborated, recovered and used in the cognition process. This process includes how people perceive, learn, recollect and think about information. Cognitive ability refers to material processing behaviors such as perceiving, thinking, memorizing and problem solving (Goldstein and Black Man.1978). Cognitive ability is a hypothetical construct that has been developed to clarify the process of perceiving, remembering, judging, appraising and problem solving. More or less, it includes one's intellectual activities. It is innate and affects a wide range of individual effective. In education, cognitive ability refers to how the students acquire knowledge how they procedure information and how it is applied in problem solving.

REVIEW OF RELATED LITERATURE

(Y. Zhang et al., 2023)The present longitudinal research employed cross-lagged path models to investigate whether or not there is a positive feedback loop between students' motivation and their level of cognitive engagement in high school over the course of two years, including data from 623 Chinese students. Within a time span of two years, 623 students completed a total of three rounds of motivational and engagement surveys. The findings imply that the participants' motivation to learn mathematics was a combination of extrinsic as well as intrinsic, and that their cognitive engagement in the subject matter was shallow.

(Li, 2022)This research examined cognitive involvement measures from a logical point of view. This study gave a thorough look at the tools and methods used to check cognitive engagement, which could help researchers make their own testing methods better. The researchers collected and categorised data on evaluations of cognitive engagement based on

their respective sources, including self-report scales, observations, interviews, instructor ratings, experiential sampling, tracking the eyes, physiological monitoring, trace evaluation, as well as content analytics.

(Sung et al., 2021) This study proposed to determine enhancing science through distance learning and impact of remote labs 2.0 on students behavioural and cognitive engagement. The high school students in chemistry classes studied through mixed method design. Multiple regression analysis was used which had an impact on conceptual learning of students through varying engagement level.

(Adams et al., 2021) The purpose of this study was to examine students' levels of involvement in a blended learning setting, taking into account both demographic and non-demographic aspects. In a survey of 462 college and graduate students, researchers used a non-experimental methodology. The results showed a significant amount of participation in public as well as private types of universities

(Kew & Tasir, 2021) The purpose of this study was to use content analysis of forum posts to look into how students are using e-learning to engage cognitively. For analysis, a total of 267 forum posts made by students over the course of a semester were gathered. The study utilized inferential statistics to investigate the correlation between students' cognitive engagement, gender, and the quantity of posts they have made in forums. The findings showed that only about half of the students provided an explanation for their posts, which was indicative of a low level of cognitive engagement. A high degree of cognitive engagement was not greatly aided by a big number of posts. Additionally, there was no correlation found in the results between gender along with the level of cognitive engagement.

(Nagadeepa, 2021) The aim of this study was to identify the determinants that contribute to students' active participation in online courses. A standardized questionnaire was administered to a total of 1065 students from different universities who were participating in online programmes. After data analysis the study revealed that students understanding and learning was most influenced by their cognitive engagement than by their support systems.

(Shenoy et al., 2020) The researchers set out to examine how teachers and students used as well as reacted to virtual classrooms amid the COVID-19 lockdown. Data were collected from faculties associated with management institutions in Bangalore. Students were more engaged in the technology implementation and subsequent discussions than they were in a typical classroom setting.

(Lee et al., 2018) This study aimed to determine the ways in which adolescent English language learners actively engaged their brains when writing by analyzing their use of certain compositional methods, such as wondering what to write about and how to justify their arguments. While the system had successfully engaged L2 students and fulfilled their content requirements, it could not provide sufficient language assistance.

(Wara et al., 2018) The objective of this research was to investigate the association amid the level of brain engagement among secondary school students in Manga Sub County, Nyamira County, Kenya and their academic performance. The researchers used the SPSS software to conduct Pearson's Product Correlation and regression analysis on numerical data in order to get meaningful insights from the data ($r=.376$, $N=312$, $p=.01$). They looked at qualitative data from interviews by theme. The research showed that cognitive engagement was a strong indicator of how well high school kids did in school. The final outcomes suggested that school-based teacher and counsellors ought to use cognitive behavioural therapy methods when meeting with students for guidance in order to improve their ability to think and learn.

(Hung & Chou, 2015) For the purpose of examining students' perceptions of the responsibilities that instructors play in blended and entirely online courses, which develops the "Online Instructor Role and Behaviour Scale (OIRBS)". In all, 750 college students took part in the research. Confirmatory factor analysis verified the five components. Course developers and organizers (CDOs) work with assessment designers (ADs), debate facilitators (DFs), social supporters (SSs), and technology facilitators (TFs). The findings revealed that blended learning maintains its structural integrity while revealing that students in both environments place the most emphasis on the CPD factor.

STATEMENT OF THE PROBLEM The statement of the present study is "STUDY BASED ON COGNITIVE ABILITY OF STUDENTS IN BLENDED AND TRADITIONAL LEARNING IN HIGH SCHOOLS OF RAIPUR DISTRICT"

OPERATIONAL DEFINITION OF THE KEY TERMS

Cognitive ability

Cognitive ability refers to the mental process which includes how people perceive, learn, remember and reason about information (Robert J. Sternberg 2006). By the term cognitive ability, the investigator refers to the way in which students acquire knowledge, how they process information i.e., think and solve problems. The cognitive ability consists of two dimensions i.e., systematic ability and intuitive ability.

Blended learning

Blended learning incorporates both real-world experiences and technology. As the name suggests, it combines printed instructions with traditional study materials with teacher-led instruction via face-to-face interactive sessions, web-based assessments that include feedback and results, and computer-mediated instruction, which includes digital, visual, and e-learning.

Traditional learning

In traditional classroom students can directly share their views and clearly their own queries with the teacher, thus getting their questions answered right away. In classroom learning the teachers can know the students and evaluate their strengths and weakness better, act as mentor, and guide students in their career possibilities

Traditional Classrooms are highly interactive A pre-planned curriculum is set for these traditional classrooms and the teacher follows the same. Regular tests are Conducted to test the understanding of the students of the curriculum. Traditional classroom have a schedule and the student is expected to follow the same to learn a particular subject or lesson.

OBJECTIVES OF THE STUDY This research aimed at achieving the following:

- To study the cognitive ability of students in Blended learning and Traditional learning approach of High school students in Raipur, Chhattisgarh.
- To study the cognitive ability of Rural and Urban area high school students in Raipur, Chhattisgarh.
- To study the cognitive ability of Hindi and English medium high school students in Raipur, Chhattisgarh.

HYPOTHESES OF THE STUDY

- There was no significant difference between the cognitive ability of high school students in Blended and Traditional learning mode in Raipur, Chhattisgarh.
- There was no significant difference between the cognitive ability of Rural and Urban area High school students in Raipur, Chhattisgarh.
- There was no significant difference between the cognitive ability of Hindi and English medium High school students in Raipur, Chhattisgarh.

DELIMITATION OF THE STUDY

The present study was delimited to 500 students of the 12 Hindi and English Medium schools of both Rural and Urban area of Raipur district in Chhattisgarh. state.

METHODOLOGY

The present piece of research falls under descriptive survey research method. It is a survey method, because here the researcher made a survey on 12 schools, 500 students selected from Rural and urban area of Raipur district in Chhattisgarh state. The main purpose of this study was to investigate the current status of mode of learning in school education and to examine the enhancement of Cognitive ability of students pertaining to the mode of learning.

METHOD OF THE STUDY:

The study was carried out through qualitative method. Survey would be conducted to study the cognitive ability of students of Raipur district.

POPULATION OF THE STUDY:

The population of the study consists of 2356 schools of Raipur district, where the total number of students are 4,65,621.

SAMPLE OF THE STUDY:

The sample of the study consists of 12 schools of Raipur district, where the total number of 500 students from Hindi and English Medium schools would be selected randomly from rural and urban area both of Raipur district in Chhattisgarh state..

SAMPLING OF THE STUDY:

In this present study the researcher used simple random sampling to collect data from population.

STATISTICAL TECHNIQUES:

Data collected for the study will be analyzed using descriptive statistics and independent samples t-test to obtain the significant difference between the mean score of Cognitive Ability. Besides quantitative analysis of data, method of qualitative analysis will be used in the study.

TOOL OF STUDY:

The researcher has used a standardized tool on Cognitive ability Test developed by Dr. Madhu Gupta and Bindiya Lakhani

DATA ANALYSIS In Data Analysis based on Cognitive Ability The data was analysed using descriptive statistics and independent samples t-test to obtain the significant difference between the mean score of Cognitive Ability. All demographic data has represented through frequency tables and bar charts.

Section -1 Descriptive statistics

Section – 2 independent samples t-test

4.2 Section – 1

Table No. 4.2.1: Distribution of Class

Class	No. of Students	Percent
IX	240	48.0
X	260	52.0
Total	500	100.0

Figure 4.2.1: Bar Chart of Distribution of Class

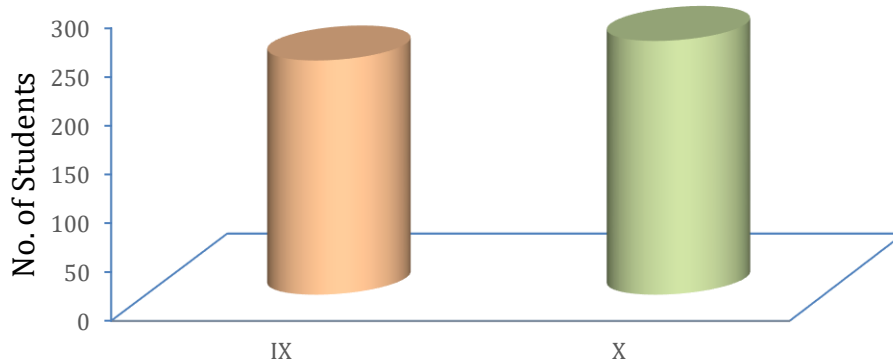


Table no. 4.2.1 and Figure 4.2.1 represents distribution of Class of students. Above result reveals that out of 500 Students, 48.0% students were studying in Class IX and remaining 52.0% in Class X.

Table No. 4.2.2: Distribution of Mode of Learning

Mode of Learning	Frequency	Percent
Traditional	250	50.0
Blended	250	50.0
Total	500	100.0

Figure 4.2.2: Bar Chart of Distribution of Mode of Learning

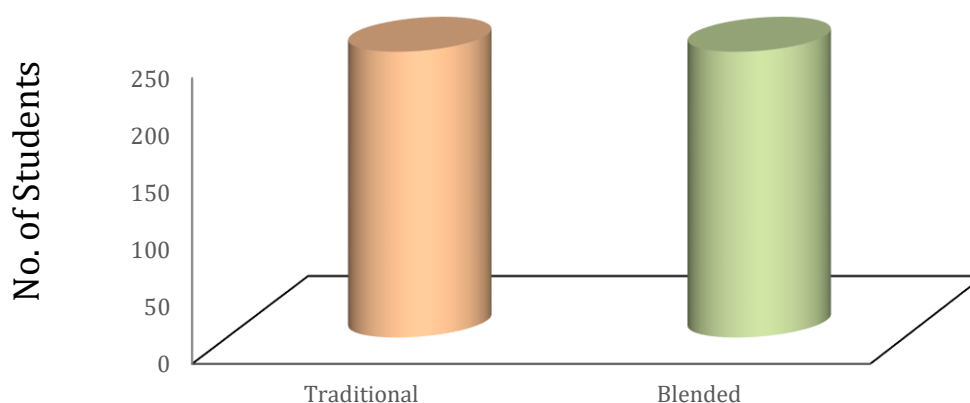


Table no. 4.2.3 and Figure 4.2.3 represents distribution of Mode of Learning of students. Above result reveals that out of 500 Students, 50.0% were belonging from Traditional learning mode and remaining 50.0% were belonging from Blended learning mode.

Table No. 4.2.3 Distribution of Residence

Residence	Frequency	Percent
Rural	238	47.6
Urban	262	52.4
Total	500	100.0

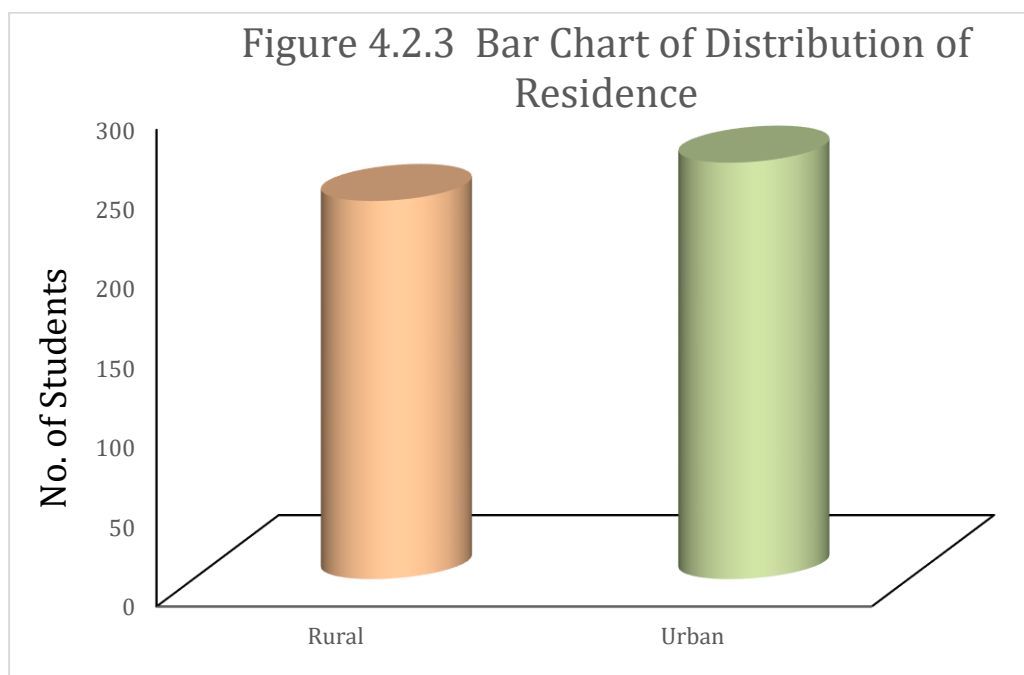


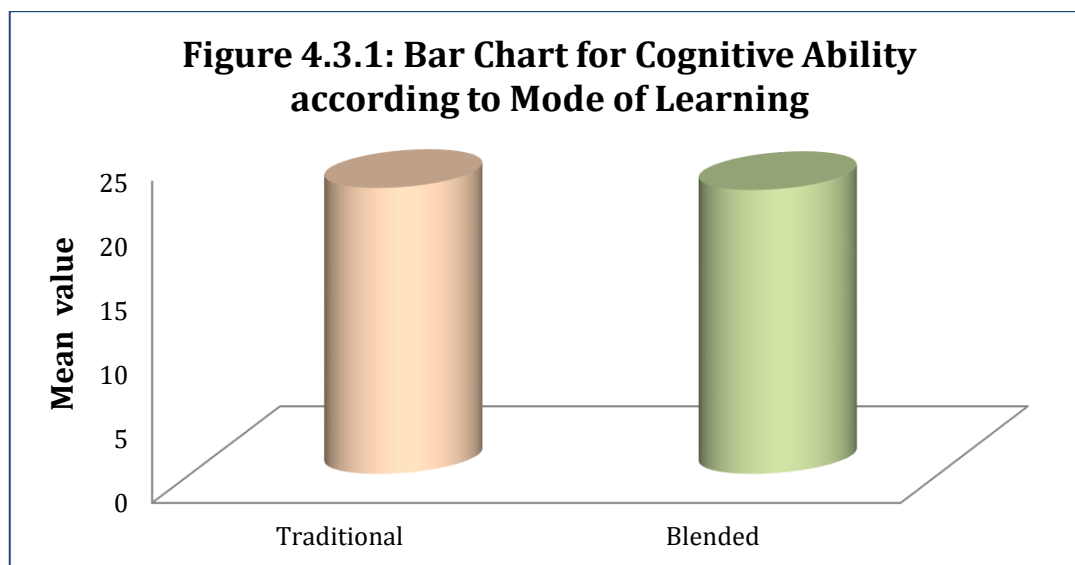
Table no. 4.2.3 and Figure 4.2.3 represents distribution of residence of students. Above result reveals that out of 500 Students, 47.6% student were from rural area and remaining 52.4% student were from urban area. We observed that in our data urban areas students were little more than that of rural.

4.3 Section -2

Hypothesis 1: Cognitive ability of traditional and blended mode students was not equal.

Table No. 4.3.1: Comparison of cognitive ability according to their mode of learning

Mode of Learning	Cognitive Ability			t value	Df	p value
	N	Mean	Std. Deviation			
Traditional	250	22.24	4.370	0.442	498	0.659
Blended	250	22.08	3.911			

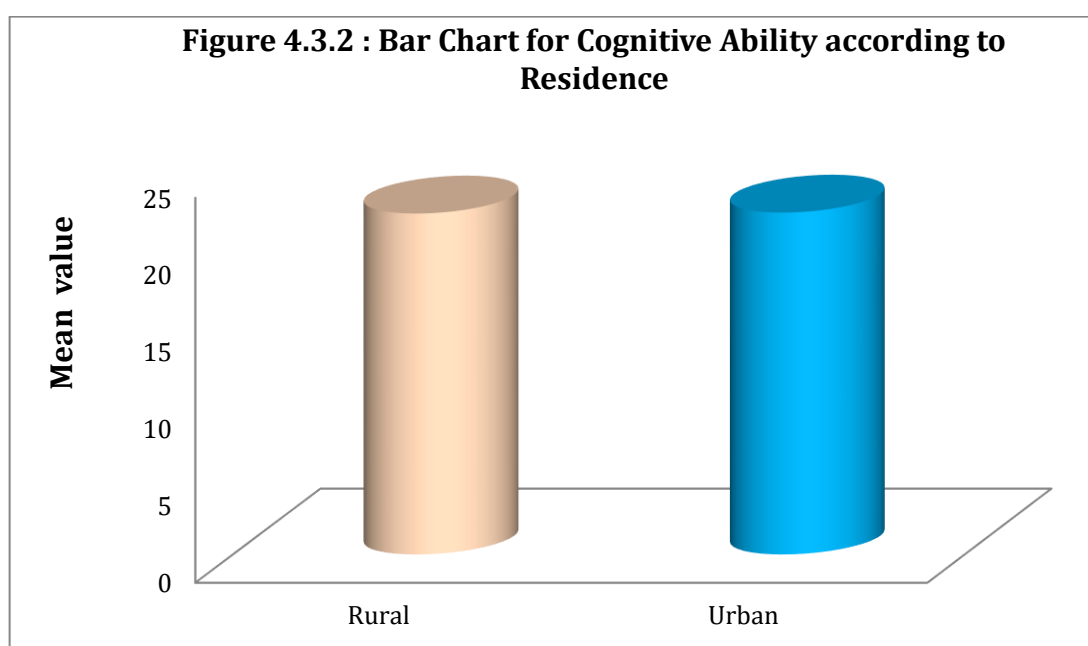


Above table and graph represents comparison of cognitive ability between traditional and blended mode of learning. The mean score and standard deviation of traditional learning students was 22.24 and 4.370 respectively. Similarly, the mean score and standard deviation of blended learning students was 22.08 and 4.127 respectively. A t value at 498 degrees of freedom was 0.142 and its p value was 0.888. p value indicates that our null hypothesis has been accepted and cognitive ability was not significantly differ between traditional and blended mode of learning. Hence, we conclude that traditional and blended mode of learning both have equal cognitive ability.

Hypothesis 2: Cognitive ability of rural and urban area students was not equal.

Table No. 4.3.2: Comparison of cognitive ability according to their residence

Residence	Cognitive Ability			t value	df	p value
	N	Mean	Std. Deviation			
Rural	238	22.13	4.170	0.142	498	0.888
Urban	262	22.19	4.127			



Above table and graph represents comparison of cognitive ability between rural and urban students. The mean score and standard deviation of rural students was 22.13 and 4.170 respectively. Similarly, the mean score and standard deviation of urban students was 22.19 and 4.127 respectively. A t value at 498 degrees of freedom was 0.142 and its p value was 0.888. p value indicates that our null hypothesis has been accepted and cognitive ability was not significantly differ between rural and urban students. Hence, we conclude that rural and urban students both have equal cognitive ability.

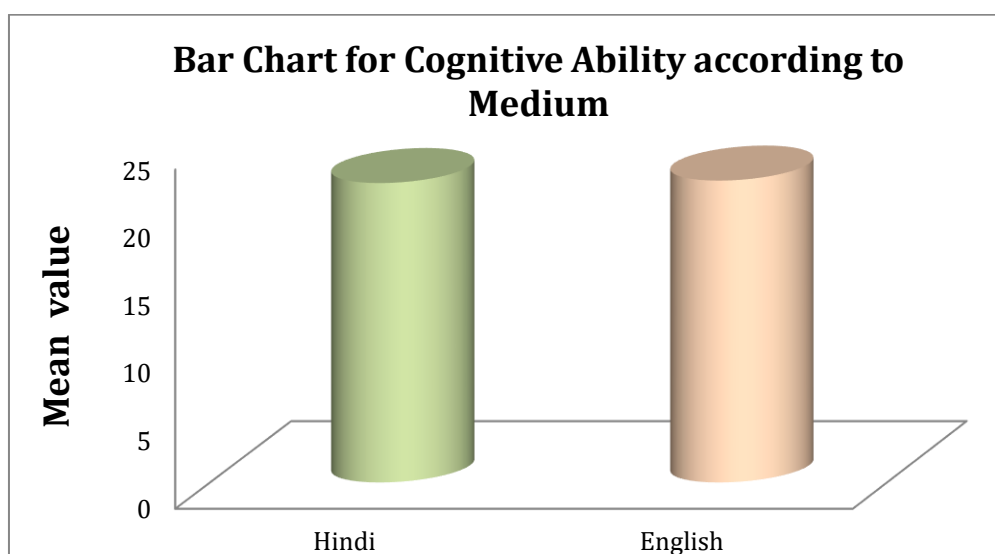
of urban students was 22.19 and 4.127 respectively. A t value at 498 degrees of freedom was 0.142 and its p value was 0.888. p value indicates that our null hypothesis has been accepted at 5% level of significance and cognitive ability was not significantly differ between rural and urban students.

Hence, we conclude that rural and urban both have equal cognitive ability.

Hypothesis 3: Cognitive ability of students was not equal in Hindi and English medium students.

Table No. 4.3.3 : Comparison of cognitive ability according to their medium of study

	Cognitive Ability					
Medium	N	Mean	Std. Deviation	t value	df	p value
Hindi	220	22.06	3.966	0.470	498	0.176
English	280	22.24	4.283			



Above table and graph represents comparison of cognitive ability between Hindi and English medium students. The mean score and standard deviation of Hindi medium students was 22.06 and 3.966 respectively. Similarly, the mean score and standard deviation of English medium students was 22.24 and 4.283 respectively. A t value at 498 degrees of freedom was 0.470 and its p value was 0.176. p value indicates that our null hypothesis has been accepted and cognitive ability was not significantly differ between Hindi and English medium students.

Hence, we conclude that Cognitive ability of students was equal in Hindi and English medium students.

CONCLUSION:

In the present study the Researcher concludes that students in traditional and blended mode of learning both have equal cognitive ability. Students residing in rural and urban area both have equal cognitive ability and the Cognitive ability of students was equal in Hindi and English medium students. Thus, the findings indicates that the null hypothesis has been accepted.

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