

Effect of Constructivist Approach on Academic Achievement of IX Grade Students in Social Science at Various Level of Cognitive Domains in Relation to Intelligence

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Abstract: The present study was conducted to see the effect of constructivist approach on the academic achievement of IX grade students at various levels of cognitive domains viz. Knowledge, Understanding, Application, and Analysis & Syntheses. In order to conduct the present study, 240 students were selected randomly from 3 schools Jalandhar city. The finding of the study revealed that it was found that teaching through constructivist approach is found to be more effective than the traditional classroom teaching with respect to achievement gain scores of students in social science. It was also found that high intelligence group was found to achieve higher in gain achievement scores than low intelligence group. It was also found that students taught with constructivist approach students with high intelligence group gain high scores in academic achievement at various levels of cognitive domain than the traditional approach

Keywords: Constructivist Approach, taxonomy of Educational Objective Cognitive Domain, Intelligence, Academic Achievement

Introduction

“We need to give our children some task of understanding which they would be able to learn and create their own versions of knowledge as they get to meet the world of bits, images and transactions of life”. This approach of National Curriculum framework is borrowed from constructivism approach of learning. The latest catchword in educational circle is constructive vision applied both to learning theory and epistemology.

Constructivism is a learning theory found in psychology which explains how people might acquire knowledge and learn. It therefore has directed application to education. The theory suggests that humans construct knowledge and meaning from their experiences. Constructivism is a view of learning, based on the belief that knowledge is not a thing that can be simply given by the teacher at the front of the room to students in their desks. Rather

knowledge is constructed by learners through an active mental process of development; learners are the builders and creators of meaning and knowledge. Constructivist views of learning in science suggest that learners can only make sense of new situations in terms of their existing understanding; it also involves inventing ideas rather than mechanically accumulating facts, meaningful learning occurs through rethinking old ideas and coming to new conclusions about new ideas which conflict with our old ideas.

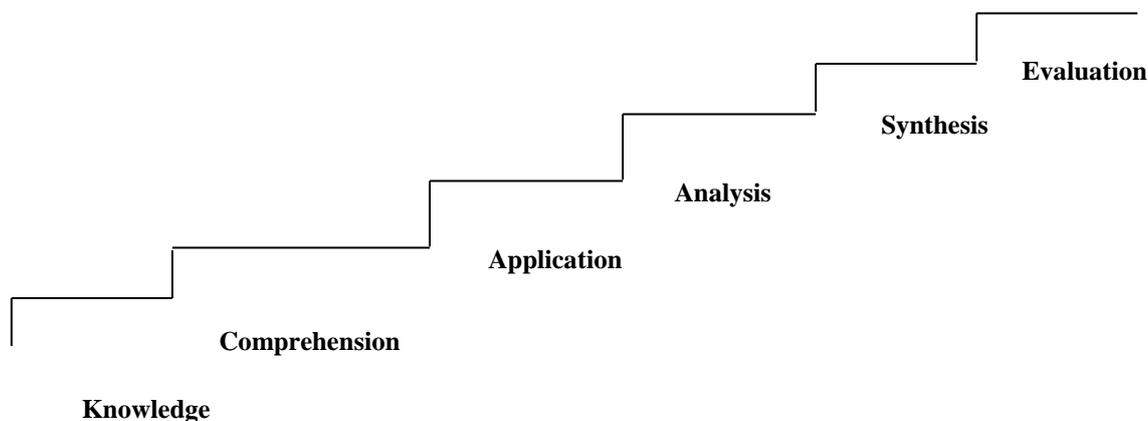
NCF 2005, in the constructivist perspective, learning is a process of construction of knowledge. Learners actively construct their own knowledge by connecting new ideas to existing ideas on the basis of material / activities presented on them. The structuring and restructuring of ideas are essential features as the learner progress in learning.

Taxonomy of Cognitive Educational Objectives and Learning Outcomes

Taxonomy of Educational Objectives

Bloom (1956), took a project on examination reform in U.S.A. The main focus of the project was that testing should be based on teaching. He made an effort that teaching and testing should be objective-centered. This approach is known as ‘Evaluation Approach’. It has revolutionized the whole educational system. He has also given the new concept of ‘Taxonomy of Educational Objectives’. The both concepts are complementary to one another. Robert Mager (1962) has used the taxonomy of educational objectives in his approach of writing objectives in behavior terms. This approach is most popular and most frequency used in writing objectives in behavior terms.

Bloom (1956) has written a handbook and taxonomy formulated to stimulate and systematize the assessment of objectives in cognitive domain. The cognitive domain of the taxonomy consists of six broad categories of cognitive learning arranged in order to increase complexity: knowledge, comprehension application, analysis, synthesis and evaluation.



Reddy (2005) In a study on the analysis of question papers of the Karnataka secondary education and examination board, found that skewed weight ages in favors of the lower recall based knowledge objective has led to the creation of imbalanced papers, whereas the assessment of higher order objectives stood neglected. Sharma (2013) the study revealed that knowledge objectives were being achieved to the extent of 52.91% while objectives relating to intellectual abilities were being achieved less than 50%. Knowledge objectives were found to be relevant and less difficult to achieve while amongst the comprehension objectives, translation objectives were found to be less difficult compared to interpretation and extrapolation. Achievement of application, analysis, synthesis and evaluation objectives were found to be low.

Intelligence

Intelligence can be defined as an ability to learn a wide variety of intellectual skills. It summarizes a child's ability to process information efficiency, recall knowledge quickly and solve problems accurately. On the other hand, intelligence is the ability and capacity to learn and carryout abstract thinking to respond appropriately to a new situation, refers to as closely related to intellect, which includes observing, thinking, understanding remembering and all ways of knowing. Thorndike (1920) defined Intelligence as the ability to make profitable use of past experience. Wagon (1937), Intelligence as the capacity to learn and adjust to relatively new and changing conditions. Mitra (1985) found his study that intelligence was the most significant correlates of achievement. Mehrotra (1986) found that there is a positive relationship between intelligence and academic achievement of high school students. Busato et al. (2000) investigated intellectual ability, learning style, personality and achievement motivation as a predictor of academic success in higher education. The results confirmed that intellectual ability was associated positively with academic success of the students. Petrides et al. (2002) studied the role of trait intelligence in academic performance and deviant behavior at school. The results demonstrated that intelligence was related to scholastic achievement. McManus et al. (2003) conducted a study on intelligence as predictors of medical carrier among the doctors through 20 years prospective study. The results indicated intelligence did not independently predict the career outcome or academic achievement. Lounsbury and Ridgite (2004) conducted a study on predicting academic success in relation to general intelligence; big five personality traits and work drive. The results indicated that intelligence had significant relationship with academic achievement. Dhall and Praveen (2005) revealed the relationship

of intelligence with self confidence and academic achievement of secondary school students. The results of the study revealed that intelligence was significantly and positively (0.541) related with academic achievement. Laidra et al. (2006) examined personality and intelligence as predictor of academic achievement. The findings confirmed a positive significant relationship between intelligence and academic achievement. Palaniappan (2007) examined the relationship between creativity and academic achievement to understand the nature of these relationships in the intelligence. The results indicated the positive relationship between intelligence and academic achievement. Beedjies (2008) conducted a study on self-concept and academic achievement of grade ninth pupils. The results indicated no significant relationship between intelligence and academic achievement of students. Naderi et al. (2008) examined intelligence and gender as predictors of academic achievement among undergraduate students of Malaysian university. The results revealed the intelligence was not significantly related to academic achievement. Wang and Xing (2009) examined the relationship among intelligence, achievement goals and academic achievement. The results indicated no significant relationship intelligence and academic achievement of the students. Intelligence was also found to have no significant relationship with achievement goals. Day et al. (2010) undertook three year longitudinal study on hope uniquely predict objective academic achievement above intelligence, personality and previous academic achievement. The result ($r=.46$) revealed a significant positive relationship between intelligence and academic achievement of the students. Adetayo and Kiadese (2011) investigated emotional intelligence and parental involvement as predictors of student's achievement in financial accounting. The results of the study revealed significant relationship between emotional intelligence and academic achievement of the students. Malik and Shujja (2013) found that positive correlation between academic achievement and emotional intelligence. Nadeem (2016) found that the male and female higher secondary students differ significantly on the composite score of emotional intelligence.

Academic Achievement

“Surely a man has to come himself only when he has found the best that is in him and has satisfied his heart with the highest achievement he is fit for.”

Achievement is a state or level of person's personal learning and his ability to apply what he has learnt. It is reflected in the text score, marks, grades attained in the different examination. The word achievement is a wider term. It includes many dimensions of accomplishment in a

given area as well as in the different area in terms of speed accuracy quality and level of difficulty with which an individual can perform a task to present achievement. So achievement is the accomplishment or proficiency or performance in the given skill or body of knowledge. Academic achievement is one of the most important goals of the educators. The present era is an era of competition. In this rapidly changing society students are conscious about their achievement. At every step in life academic records speaks for an individual. Crow and Crow (1956) defined that achievement means the extent to which a learner is profiting from instructions in a given area of learning. Good (1959) described achievement as accomplishment or proficiency of performance in a given skill or body of knowledge. Ebel (1979) defined that achievement refers to the outcomes of formal instruction in cognitive domain. Jain (1981) found that achievement of the pupils from urban areas was better than of the pupil from rural area. Kumari (2010) found that Academic Achievement as the sum total of information gained after completing a course of instruction partially or fully in a particular grade that he has obtained on an achievement test.

Review of Literature on Relation Between the Constructivist Approach and Academic Achievement

Constructivist based teaching strategy has significant effect to enhance student academic performance in different.

Pooran (2000) examined the use of approaches to teaching science based on two contrasting perspectives in learning viz., social constructivist and traditional, and their effects on student's attitudes and achievement. It was found that students who were taught through constructivist-based teaching, showed more favorable attitude towards science as a subject. They were found to have obtained higher scores in class achievement, total achievement and achievement on the knowledge and application test.

Uzuntiryaki (2003) compared the effectiveness of instruction based on constructivist approach over traditionally designed chemistry instruction on 9th standard students' understanding of chemical bonding concepts. The result indicated that instruction based on constructivist approach caused a significantly better understanding of scientific conception related to

chemical bonding and produced significantly higher positive attitude towards chemistry as a school subject than the traditionally designed chemistry instruction

Aggabao (2005) compared the effectiveness of three teaching approaches based on constructivist learning philosophies on achievement as well as retention of learning of students. The study focuses on comparing new teaching approaches that were designed based on constructivist learning philosophies to current traditional teaching. Results of this study showed 79 significant differences among mean gain scores on both achievement and retention measures.

Kim (2005) aimed at validating the value of the constructivist approach in 6th standard mathematics in relation to student's academic achievement, self concept and learning strategies on the part of the students. It was found that Constructivist teaching was more effective than traditional teaching in terms of academic achievement.

Sridevi (2006) took up a quasi-experimental study to find whether constructivist approach to science instruction could help 8th standard students of Mysore, India to improve the Science achievement and Attitude towards Science. The results showed that Constructivist teaching is more effective than traditional teaching in terms of Achievement in Science and Attitude towards Science among 8th standard students.

Karaduman and Gultekin (2007) investigated whether the learning materials that were based on constructivist learning principles had any effect on social studies' attitude, academic success and retention of 5th grade students. The findings of the study indicated that learning materials based on constructivist learning principles increased students' academic success and retention in social studies but have any effect on their social studies' attitude

McCray (2007) designed a program to enhance social studies skills and knowledge. Social and cognitive constructivist learning methods were the main focus of the interventions chosen to help. It was revealed that constructivist technique improved students' academic performance and achievement.

Peter et. al (2010) conducted a study to assess the effect of constructivist instructional approach on teaching practical skills in general mental work to mechanical related trade students in South Western Nigeria technical colleges. The findings indicated that the students taught with constructivist instructional approach showed higher academic achievement in general mental work than the students taught with conventional method.

Calik (2011) examined how the graduate course influenced the graduate students' views about the meaning of the terms constructivism, conceptual change, worksheet, analogy, and conceptual change test after completing the course. The findings proved that constructivist environment not only helped the post graduate students to gain practical experience but also to see how the developed material worked.

Obomanu and Adaramola (2011) found in their study that constructivist teaching and learning approach narrowed the gap between the low and high achievement students as well as significantly promoted the academic outcomes of at risk students compared to the traditional settings. There is a positive effect of constructivist classroom environment compared to traditional teaching method.

Hagan and Richmond (2012) conducted an experimental study to investigate the effect of teaching constructively in an educational psychology course. Results indicated that using a constructivist approach to teaching constructivism in educational psychology helped pre-service teachers to make significant gains in their academic and self-reported knowledge of constructivist theory.

Madu and Ezeamagu (2013) investigated the efficacy of the constructivist strategies the 5Es viz., Engagement, Exploration, Explanation, Elaboration and Evaluation at the primary school level. Pupils in the treatment group made significantly greater gains on fraction achievement test than the comparison group.

Richard, Samuel and Johnston M. Changeiywo (2015) conducted study on effects of constructivist teaching approach on students' achievement in secondary school chemistry in Baringo north sub-county, Kenya. The results of the study show that the constructivist teaching approach resulted in significantly higher students' achievement in chemistry.

Chowdhury (2016) conducted study on the Effect of Constructivist Approach on the Achievement in Mathematics of IX Standard Students. This study indicated that Constructivist learning approach significantly improves student's achievement in mathematics as compared to using a traditional teaching. Secondly Constructivist learning approach was equally effective for boys and girls in improving their achievements in mathematics. Thirdly students taught in constructivist learning environment have significantly enhanced their understanding and application abilities as compared to other abilities like knowledge and skill.

Pangat (2017) conducted study on effect of constructivist pedagogy on the academic achievement of secondary school students in mathematics. It was found that the performance

of mathematics students taught with constructivist approach was better than that of group taught by conventional approach. The study revealed that using constructivist learning approach significantly improves students' achievement in mathematics as compared to using a traditional teaching method.

Rationale of the Study

After Independence India has progressed in all field and especially in the field of education. For qualitative improvement of education, there is justifiable need of new teaching methods. Constructivism is relatively a modern view point or new philosophy emerged in the field of education and psychology. It has provided an altogether new direction for our understanding to how does a child learn and develop intellectually. Constructivism represents a paradigm shift from education based on behaviorism to education based on cognitive. Our routine system of education in which students remain most of the time passive listeners or silent spectators. They are, required to reproduce or represent the reality of the facts communicated to them by the teacher. In this system learner is least bothered from where communicated knowledge has come, he has simple receive, revise, practice and then reproduce it in the form and communicate to him. By taking all these problems the investigation is planned to find an appropriate constructivist approach which can develop commitment and satisfaction among students, which is essential for institutional effectiveness. In this approach learners should play an active role in the process of learning or cognitive development by constructing their own knowledge on the basis of their past experiences and their present interaction with the environment. The belief that a learner can learn only when he is able to construct the required knowledge by himself. It effects the achieve and personality of students in general and social science in particular.

Statement of the Problem

Effect of Constructivist Approach on the Academic Achievement of 1X Grade Students in Social Science at Various Levels of Cognitive Domain in Relation to Intelligence

Objective of the Study

- To study the effect of Constructivist approach on academic achievement in relation to Intelligence.

- To study the effect of constructivist approach on academic achievement of students in social science
- To study the effect of interaction between method of teaching and intelligence on the scores of academic achievement
- To study the effect of Constructivist approach on academic achievement at various levels of Cognitive Domain.
- To study the effect of constructivist approach on academic achievement at various levels of Cognitive Domain with high and low intelligence.
- To study the effect of interaction between method of teaching and intelligence on the scores of academic achievement at various levels of cognitive domain.

Hypotheses of the Study

- There is no significant difference in academic achievement of students with High Intelligence and Low Intelligence.
- There is no significant difference in academic achievement of students in social science when taught through constructivist approach and traditional approach.
- There is no interaction between method of teaching and intelligence on the scores of academic achievement.
- There is no significance difference in academic achievement of students at various levels of cognitive with high and low intelligence.
- There is no significant difference in academic achievement at various levels of cognitive domain taught with and without constructivist approach.
- There is no interaction between method of teaching and intelligence on the scores of academic achievement at various levels of cognitive domain.

Delimitation of the Study

- The problem was delimited to public schools of Jalandhar city.
- The problem was delimited to 5 topic viz. Government, organs of government, Fundamentals Rights, Rural local self government, Election procedure.

Sample of the Study

In order to conduct the study on ninth class students' three public schools of Jalandhar City were selected randomly. From each school, two intact sections consisting of approx 40 students were selected. One section was considered as experimental group (which was taught by the investigator through constructivist approach) and other as a control group (which was taught by the regular teacher through traditional method). In total, samples of 240 students of public schools were selected.

Design of the Study

In order to conduct the investigation 2X2 factorial design was employed. Where in gain in academic achievement was studied as dependent variable. The constructivist approach was followed in the experimental group and was considered as a treatment variable. Intelligence was studied as independent variable and was used for the purpose of classification i.e. High Intelligence group and Low Intelligence group.

Tools Used

The following tools have been used for the collection of the data in the present investigation:

1. Teaching material following constructivist approach in social sciences of ninth class (prepared by the investigator)
2. Achievement test at different levels of cognitive domain (prepared by the investigator)
3. Intelligence test by J.C Raven's.

Method and Procedure of the Study

The study was conducted through experimental method. Random Sampling technique was used. After the selection of the sample and identification of the students for experimental and control group. Intelligence test was administered on both the groups. On the basis of this intelligence test, high intelligence and low intelligence groups were separated. The experimental group was taught through constructivist approach and control group was taught through regular classroom teaching. Before teaching, pre test was administered and after the completion of teaching, post test was administered. Qualitative analysis of constructivist approach was studied on academic achievement at various levels of cognitive domain in relation to High Intelligence and Low Intelligence.

Statistical Techniques

After the collection of the data, the following statistical techniques have been employed to analyze the obtained data

- Mean, Median, Mode has been used to study the nature of data.
- 2x2 Analysis of variance has been employed to analyze the data.
- Qualitative analyze

Analysis and Interpretation of the Data

The data has been analyzed under the following headings:

H₁ : There is no significant difference in academic achievement of students with High Intelligence and Low Intelligence.

Table 1

MEANS & S.Ds OF SUB GROUPS FOR 2x2 FACTORIAL DESIGN ON THE GAIN SCORES OF ACADEMIC ACHIEVEMENT OF STUDENTS IN SOCIAL SCIENCE WITH AND WITHOUT CONSTRUCTIVIST APPROACH IN RELATION TO INTELLIGENCE

	Constructivist Approach	Traditional Approach	
H.I.	M ₁ = 14.171 SD ₁ = 5.845 N ₁ = 70	M ₂ = 6.653 SD ₂ = 4.467 N ₂ = 52	MM ₁ = 10.41
L.I.	M ₃ = 13.86 SD ₃ = 5.820 N ₃ = 50	M ₄ = 4.38 SD ₄ = 2.88 N ₄ = 68	MM ₂ = 9.12
	MM ₃ = 14.02	MM ₄ = 5.52	

In order to analyze the effect of variance, the obtained scores were subjected to ANOVA and results have been presented in the Table 2 below:-

TABLE 2
SUMMARY OF ANOVA FOR 2X2 FACTORIAL DESIGN ON THE GAIN
SCORES OF ACADEMIC ACHIEVEMENT IN SOCIAL SCIENCE

Sources of Variance	SS	df	Mss	F-ratio
Intelligence (A)	395.85	1	395.85	16.59**
Treatment (B)	4515	1	4515	189.23**
A x B (Interaction)	551	1	551	23.09**
With in	5630	236	23.86	
Total		239		

****Significant at the 0.05 level of confidence.**

****Significant at the 0.01 level of confidence.**

Main Effects

Intelligence (A)

It may be observed from the Table 2 that F- Ratio for the difference in means of academic achievement scores in high intelligence and low intelligence group was found to be significant at the 0.01 level of confidence indicating that achievement scores of two groups were found to be different with respect to intelligence level. Thus, the data provide sufficient evidence to reject the hypothesis (1) namely, “There is no significant difference in academic achievement of students with High Intelligence and Low Intelligence”.

H₂ : There is no significant difference in academic achievement of students in social science when taught through constructivist approach and traditional approach.

Treatment (B)

It may be observed from the Table 2 that F-ratio for the difference in means of academic achievement scores in Traditional teaching and Constructivist teaching was found to be significant at the 0.01 level of confidence indicating that achievement scores of two groups were found to be different with respect to treatment variable. Thus, the data provide sufficient evidence to reject the hypothesis (1) namely, “There is no significant difference in academic

achievement of students in social science when taught through constructivist approach and traditional approach”.

The examination of corresponding group means from the Table 1 suggests that students performed better when taught through constructivist approach in comparison to traditional approach.

Two Order Interaction

H₃: There is no interaction between method of teaching and intelligence on the scores of academic achievement

Intelligence and Treatment (AXB)

It may be observed from the table 2 that F- ratio for the interaction between intelligence and treatment variable on the scores of academic achievement, was found to be significant at the 0.01 level of confidence. Hence the Hypothesis (3) namely, “There is no interaction between method of teaching and intelligence on the scores of academic achievement” is rejected.

Further t-ratios have been computed to formed inter cell difference which are presented below in the Table 3

TABLE 3

t- RATIO BETWEEN THE DIFFERENCES IN MEANS OF VARIOUS CELLS OF AXB INTERACTION OF 2x2 DESIGNS

Cells	SE _D	t-ratio
M ₁ -M ₂	0.933	8.05**
M ₁ -M ₃	1.164	0.267
M ₁ -M ₄	0.780	12.55**
M ₂ -M ₃	1.029	7.00 **
M ₂ -M ₄	0.710	0.322
M ₃ -M ₄	0.894	10.60**

Significant at the 0.01 level of confidence.

The above table 3 reveals that t-ratio are significant for the differences between means of cells M₁-M₂, M₁-M₄, M₂-M₃, M₃-M₄, which are responsible for the significance of interaction.

The interpretation is as under:-

1. Students when taught with constructivist approach have high academic scores either they are in high intelligence group or in low intelligence group than the traditional approach.
2. Students with low intelligence group when taught with constructivist approach have high academic scores than high intelligence group in traditional approach.
3. Students with low intelligence group have high academic scores than low intelligence group in traditional approach.

H₄: There is no significance difference in academic achievement of students at various levels of cognitive domain with high and low intelligence.

The means and SD_s of sub groups for 2x2 factorial design on the gain scores of academic achievement taught social science with and without constructivist approach at various levels of cognitive domain have been calculated and are presented in the table 4.

TABLE 4

MEANS AND SD_s OF SUB GROUPS OF 2x2 FACTORIAL DESIGN ON THE GAIN SCORES OF ACADEMIC ACHIEVEMENT OF STUDENTS IN SOCIAL SCIENCE WITH AND WITHOUT CONSTRUCTIVIST APPROACH AT VARIOUS LEVELS OF COGNITIVE DOMAIN IN RELATION TO INTELLIGENCE.

Intelligence	Constructivist Approach				Traditional Approach			
	Levels in Cognitive Domain				Levels in Cognitive Domain			
	Know- ledge	Under- standin g	Appli- cation	Analysis & Synthese s	Know- ledge	Under- standin g	Appli- cation	Analysis & Synthese s
High Intelligence	M ₁ =2.85 SD ₁ =1.4 03 N= 70	M ₂ =3.9 57 SD ₂ =2. 067 N=70	M ₃ =1.8 5 SD ₃ =2. 093 N=70	M ₄ =3.55 SD ₄ =2.6 72 N=70	M ₁ =2 SD ₁ =1. 596 N= 52	M ₂ =1.9 23 SD ₂ =2. 239 N=52	M ₃ =1. 173 SD ₃ =1. 504 N=52	M ₄ =1.82 SD ₄ =1.4 64 N=52

Low Intelligence	$M_1=3.14$	$M_2=4.28$	$M_3=2.04$	$M_4=4.26$	$M_1=1.3$	$M_2=1.32$	$M_3=0.94$	$M_4=1.769$
	$SD_1=1.399$	$SD_2=3.540$	$SD_3=1.484$	$SD_4=2.716$	$SD_1=1.619$	$SD_2=1.284$	$SD_3=0.890$	$SD_4=1.675$
	N= 50	N=50	N=50	N=50	N= 68	N=68	N=68	N=68

In order to analyze the effect of variance, the obtained scores were subjected to ANOVA and results have been presented in the Table 5 below:-

TABLE 5

**2x2 ANALYSIS OF VARIANCE ON THE GAIN SCORES OF ACADEMIC
ACHIEVEMENT AT VARIOUS LEVELS OF COGNITIVE DOMAIN
WITH AND WITHOUT THE CONSTRUCTIVIST APPROACH**

	Knowledge		Understanding		Application		Analysis & Synthesis	
	MSS	F	MSS	F	MSS	F	MSS	F
Intelligence	8	3.53	16	2.99	3	1.18	2	0.28
Treatment	104.1	46.01**	380	70.89**	53	20.86**	315	45.38**
Interaction	5	2.21	3	0.56	8	3.14	18	2.59

**Significant at the 0.05 level of confidence.

**Significant at the 0.01 level of confidence.

Main Effect

Intelligence (A)

It may be observed from the Table 5 that F- ratios for the difference in means of academic achievement scores at various levels of cognitive domain in high intelligence and low intelligence groups were not found to be significant even at the 0.01 level of confidence indicating that achievement gain scores of various levels of cognitive domain were found to be different with respect to intelligence level. Thus, the data provide sufficient evidence to not

reject the hypothesis (4) namely, “There is no significance difference in academic achievement of students at various levels of cognitive domain with high and low intelligence.”

H₅ : There is no significant difference in academic achievement at various levels of cognitive domain when taught with and without constructivist approach

Treatment (B)

It may be observed from the Table 5 that F-ratios for the difference in means of academic achievement scores at various levels of cognitive domain when taught with and without constructivist approach were found to be significant at the 0.01 level of confidence indicating that achievement scores of at various levels of cognitive domain were found to be different with respect to treatment variable. Thus, the data provide sufficient evidence to reject the hypothesis (5) namely, “There is no significant difference in academic achievement at various levels of cognitive domain when taught with and without constructivist approach”.

Further the analysis of mean table 4 suggest that academic gain scores of students at various levels of cognitive domain was higher when taught through constructivist approach in comparison to traditional approach.

H₆ : There is no interaction between method of teaching and intelligence on the scores of academic achievement at various levels of cognitive domain.

Intelligence and Treatment (AXB)

It may be observed from the table 5 that F- ratio for the interaction between intelligence and treatment variable on the scores of academic achievement, at various levels of cognitive domain was not found to be significant at 0.01 level of confidence. Hence the Hypothesis namely’ “There is no interaction between method of teaching and intelligence on the scores of academic achievement at various levels of cognitive domain” is not rejected.

Findings of the study

- It was found that high intelligence group was found to achieve higher in gain achievement scores than low intelligence group.

- It was found that teaching through constructivist approach was found to be more effective than the traditional classroom teaching with respect to achievement gain scores of students in social science
- It was found that students when taught with constructivist approach have high academic scores either they are in high intelligence group or in low intelligence group than the traditional approach.

Discussion on Findings and Educational Implications

This study revealed that high intelligence group was found to achieve higher in academic achievement scores than low intelligence group. The result of present study is in tune with results of following studies. The study of Dhall and Praveen (2005) revealed that intelligence was significantly and positively (0.541) related with academic achievement. The study of Palaniappan (2007) indicated the positive relationship between intelligence and academic achievement. Flynt (2008) examined the influence of behaviors exhibited in the classroom on reading and math achievement. Results revealed that intelligence had a significant and positive relationship with achievements in maths. The study of Arini et al. (2009) showed that intelligence effected academic achievement positively and significantly. Day et al. (2010) undertook three year longitudinal study and gave the result ($r=.46$) a significant positive relationship between intelligence and academic achievement of the students exist. It was also found that teaching through constructivist approach was found to be more effective than the traditional classroom teaching with respect to achievement gain scores of students in social science. The findings are in tune with Kim (2006) who found that there is a significant difference found between the constructivist teaching group and the traditional teaching group at $p<0.001$ with $F=89.11$ in academic achievement. In the same way Peter et al (2010) , Obomanu and Adaramola (2011) , Hagan and Richmond (2012) conducted a study to assess the effect of constructivist instructional approach on teaching practical skills. The findings indicated that the students taught with constructivist instructional approach showed higher academic achievement in general mental work than the students taught with conventional method.

From the findings of this study, it is clear that the Constructivist Teaching Approach (CTA) is an effective method for teaching social study. This means that the use of the approach at secondary school level can solve all the problems related to poor performance in social studies. Therefore, it will supplement the government efforts to improve the social study. Curriculum developers will find this study helpful in designing appropriate instructional strategies which enhance social study teaching and learning process. Teacher educators will also find the study useful in developing programs aimed at producing teachers capable of creating a learning environment that enables learners to actively construct knowledge and understanding for themselves, hence improve their achievement in social study.

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