

Effect of Face to Face Collaborative Learning Approach on Motivation to Learn Social Studies in Relation to their Cognitive Style

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ABSTRACT

The present study investigates the effect of face to face collaborative learning approach on motivation to learn social studies in relation to their cognitive style. The sample of 120 students of 7th class taken from two different schools of Balachaur, Shaheed Bhagat Singh Nagar, affiliated to Punjab School Education Board, SAS Nagar. Instructional material based on face to face collaborative learning approach were prepared and implemented to the experimental group after pre-testing. The gain scores were computed after post-test for all the students. Motivation to learn Social Studies scale and Cognitive style inventory were also administered. The data was analyzed statistically with the help of mean, SD and analytical variance. A two way (2x2) analysis of variance was used to arrive at the following conclusions: (i) face to face collaborative learning approach group was found to attain significantly higher motivation to learn scores as compared to control group. (ii) Motivation to learn social studies scores of students with different cognitive style was found not significant, (iii) No significant interaction effect was found between face to face collaborative learning approach and cognitive style groups on the motivation to learn social studies.

1. Introduction

It has been asserted that people have an intrinsic need for collaboration as well as for mutual knowledge and 'sharing meaning' (Stahl, 2006). When interacting with others, we may notice the perspectives of others and discover something new. In working together, we may feel that many challenges are easier to solve, and afterwards we may notice that we know more and think differently. In other words, we have learnt. In the field of learning sciences, many studies have been conducted to investigate the essence of collaboration, which also is referred as joint meaning making (Dillenbourg, 1999; Stahl, 2006; Sawyer, 2006). Studies have shown that in collaborative situations, the key to learning is building and maintaining a shared conception of a problem or task. Therefore, in any successful collaborative situation, there is a constant effort to coordinate language and activity in order to reach a shared understanding (Teasley & Roschelle, 1993; Dillenbourg, 1999). This effort matters in collaboration because it places individual in situations where the key mechanisms of learning can take place (Schwartz, 1999).

The aspect of collaborative learning that is perhaps hardest to understand in detail is what may be called "practices of meaning-making in the context of joint activity," inter subjective learning (Suthers, 2005) or group cognition (Stahl, 2006). This is learning that is not merely accomplished interactionally, but is actually constituted of the interactions between participants. Stahl, Koschmann and Suthers (2006) argue for the study of "member's methods" of meaning making: how participants in such instructional settings actually go about doing learning (emphasis in original). Face-to-face collaboration involves the social aspect of communication (Fussell, Kraut, Siegel & Brennan, 2002). In face-to-face collaborative learning, unbalanced participation often leads to the un-desirable result of some participants experiencing lower

learning outcomes than others (DiMicco, Pandolfo & Bender, 2004).

Student motivation naturally has to do with students' desire to participate in the learning process. But it also concerns the reasons or goals that underlie their involvement or noninvolvement in academic activities. Although students may be equally motivated to perform a task, the sources of their motivation may differ. A student who is intrinsically motivated undertakes an activity "for its own sake, for the enjoyment it provides, the learning it permits, or the feelings of accomplishment it evokes". An extrinsically motivated student performs "in order to obtain some reward or avoid some punishment external to the activity itself," such as grades, stickers, or teacher approval (Lepper, 1988).

The term motivation to learn has a slightly different meaning. It is defined by one author as "the meaningfulness, value, and benefits of academic tasks to the learner--regardless of whether or not they are intrinsically interesting" (Marshall, 1987). Another notes that motivation to learn is characterized by long-term, quality involvement in learning and commitment to the process of learning (Ames 1990). Brophy (1987), motivation to learn is a competence acquired "through general experience but stimulated most directly through modeling, communication of expectations, and direct instruction or socialization by significant others (especially parents and teachers)."

Cognitive style is the underlying aspect of an individual's style and as being most likely to influence their approach to learning. It is considered as the most stable preference related to information processing and is regarded as a narrower concept than the concept of learning style (Cunningham-Atkins, Powel, Moore, Hobbs & Sharpe, 2004).

Sternberg, Grigorenkoo and Zang, (2014) define cognitive style as an individual differences in approaches to tasks that can make a differences in the way person perceives, learns or thinks, this differences in learning exist among male and female students.

2. Need and Significance of the Study

Team work has great importance as we know good teams are the key behind all of the best societies, organizations and nations. Learning through collaboration develops independent thinking. It thereafter leads to collaborate with students at global level; the students must be taught how to collaborate with other students for the best learning outcomes. It has been observed that when any individual work in team they not only learn better but also there is rise in the motivation to learn than when they work alone. Learners feel free to learn from their team members and open to discuss with them. So the need arises that if we apply same pedagogy in our classrooms, definitely results will be different. Student's participation in the classroom will be better and learners will be intrinsically motivated to learn. The significance of the study increases, as very few studies are conducted on collaborative learning, thus this research is intended to explore and to find the effect of collaborative learning approach on motivation to learn social studies students in relation to their cognitive style.

3. Objectives

1. To study the effectiveness of face to face collaborative learning approach and conventional teaching approach on motivation to learn social study of 7th class learners.
2. To study the effectiveness of face to face collaborative learning approach and conventional learning approach on motivation to learn social study of learners with field dependent and field independent cognitive styles.
3. To study the interaction effect of instructional approaches and cognitive style on motivation to learn social study of 7th class learners.

4. Hypotheses

H₁: There will be no significant difference in motivation to learn social study mean gain scores of the two treatment groups.

H₂: There will be no significant difference in motivation to learn social study mean gain scores of learners with dependent and independent cognitive styles.

H₃: There will be no significant interaction effect of instructional approach and cognitive style on motivation to learn social study mean gain scores.

5. Sample

The study was conducted on a random sample of 120 students of 7th class. 60 students were taken from Lef. General Bikram Singh Memorial Sen. Sec. School, Balachaur and 60 students from BAV Sen. Sec. School, Balachaur, SBS Nagar (Punjab). It was random and purposive sample. The study was conducted on two intact groups viz. one is experimental group and other is control group in each school.

The two schools were randomly selected from the total school of Balachaur.

6. Design

For the purpose of present investigation a pre and post-test factorial design was employed. In order to analyze the data (2x2) Analysis of Variance was used. Experimental group was taught through face to face collaborative learning approach and the control group was taught through conventional teaching approach. The study covers two independent variables viz. instructional approach and cognitive style. The variables of instructional approach were studied at two levels i. e. face to face collaborative approach and conventional teaching approach. The variable cognitive style was also studied at two levels i. e. field dependent and field independent cognitive style. These variables were work as independent variables. The main dependent variable was motivation to learn social study which will be calculated as the difference in pre-test and post-test scores in the test.

7. Tools used

1. Motivation to learn social studies scale was developed and used by the investigators.
2. Group Embedded Figure Test by Witkin, Oltman, Raskin & Karp (1971) was used to classify the students according to their cognitive style.
3. 10 Lessons in Social Studies, (Transport, Water Cycle and Ocean Movements, Environment, Atmospheric Pressure, Advertisement, Unpacking Gender, Natural Vegetation, Life in the Deserts, Soil and its Conservation and Major Landforms of the Earth) based on Face to Face Collaborative Learning Approach and Conventional Teaching Approach were prepared by the investigators.

8. Procedure

After the selection of the sample and allocation of students to the two instructional strategies, the experiment was conducted in four phases. Firstly, the investigator set a meeting with the principals of selected schools for the experiment. Secondly, the pre test of motivation to learn social studies was administered on the total sample. After that, the group embedded figure test was administered in each school for classification of the students. The answer sheets were scored as per the scoring key to obtain the scores of students on the variables. Thirdly, treatment was given to the experimental group. The experimental group was taught through face to face collaborative learning approach and control group was taught by conventional teaching approach. Fourthly, after the completion of the experiment, the post- test was administered to the students of both the groups. The answer-sheets were scored with the help of scoring key. Time limit for the test was 45 minutes.

9. Analysis and Interpretation of the Results

Analysis of Descriptive Statistics

The data were analyzed to determine the nature of the distribution of scores by employing mean and standard deviation. The two way analysis of variance was used to test the hypotheses related to approaches of teaching and

cognitive style of students. The mean and standard deviation of different sub groups have been presented in table- 1, 2 & 3.

Table1: Means and SD of Motivation to Learn Social Studies Scores for the Different Sub Groups

Cognitive Style	Instructional Approach						Total N	Mean	SD
	Face to Face Collaborative Learning Approach			Conventional Teaching Approach					
	N	Mean	SD	N	Mean	SD			
Field Dependent	30	14.80	6.99	30	5.79	3.98	60	10.76	6.94
Field Independent	30	15.82	8.31	30	7.33	1.28	60	12.06	7.20
Total	60	15.31	6.20	60	6.56	3.14	N= 120		

Source: Field Study, 2018

It may be observed from the table-1 that the mean scores of face to face collaborative learning approach (M=15.31) is higher than the conventional teaching approach (M=6.56). This shows that face to face collaborative learning approach is more effective than the conventional teaching approach. It is also confirmed that the mean of the two groups i.e. field dependent cognitive style and field independent cognitive style group is 10.76 and 12.06 respectively. It is concluded that the gain mean with face to face collaborative learning approach has shown significant differences for field dependent cognitive style

and field independent cognitive style students. These differences are also found in respect of the different cognitive style group taught through conventional teaching approach.

Analysis of Variance on Motivation to Learn Social Studies Scores

The mean of different sub-groups, sum of squares, degree of freedom, mean sum of squares and the F - ratio have been presented in table - 2

Table -2: Summary of Analysis of Variance (2x2) Factorial Designs

Source of Variance	Sum of Squares	df	Mean Sum of Squares	F- ratio
Face to Face Collaborative Learning Approach (A)	2279.41	1	2279.41	76.08**
Cognitive Style (B)	57.41	1	57.41	1.91
Interaction (Ax B)	3.04	1	3.04	0.10
Error	3476.31	116	29.96	

*Significance at the 0.05 level of confidence, **Significance at the 0.01 level of confidence (Critical value 3.92 at 0.05 level and critical value 6.86 at 0.01 level), df 1/116

Main Effects

Face to Face Collaborative Learning Approach (A)

It is observed from the table -2 that the F-ratio for difference in mean gain scores of face to face collaborative learning approach and conventional teaching approach group is 76.08, which in comparison to the table value was found significant at 0.01 level of significance. It shows that the groups were not different beyond the contribution of chance. Hence, the hypothesis H₁: i.e. there will be no significant difference in

motivation to learn social study mean gain scores of the two treatment groups., is rejected. Thus result indicates that motivation to learn social studies of experimental group was higher than that of control group learners.

To probe deeper F-ratio was followed by t-test. The value of t-ratio for experimental and control group have been placed in table-3.

Table – 3: t-ratio of Gain Mean Scores between Experimental and Control Groups

Variables	Experimental Group			Control Group			SE _D	t-value
	N	Mean	SD	N	Mean	SD		
Gain Scores	60	15.31	6.20	60	6.56	3.14	0.89	9.83**

** Significant at 0.01 level (Critical Value 1.9803 at 0.05 and 2.6181 at 0.01 level, df 118)

It is observed from the table-3 that the mean gain score of experimental group is 15.31, which is higher than the corresponding mean gain score of 6.56 of the control group. The t-value testing the significance of mean differences of face to face collaborative learning approach and traditional teaching approach is 9.83, which in comparison to the table value was found to be significant at 0.01 level of significance. The result indicates that there was significant difference in gain scores on motivation to learn social studies of face to face collaborative learning approach group and conventional teaching approach group.

Cognitive Style (B)

It is observed from the table-2 that the F-ratio for difference in mean of the two groups of cognitive style are 1.91, which in comparison to the table value was found not significant even at 0.05 level of significance. Hence, the hypothesis H₂ i.e. There will be no significant difference in motivation to learn social study mean gain scores of learners with dependent and independent cognitive styles, is accepted. Thus a result indicates that there is no significant difference in the motivation to learn social studies scores of learner with field dependent and field independent cognitive styles.

Interaction Effect ($A \times B$)

It is observed from the table-2 that the F- ratio for the interaction between method of instruction and cognitive style groups is 0.10, which in comparison to the table value was found not significant even at 0.05 level of significance. It indicates that the two variables do not interact with each other. Thus, the null hypothesis H_3 i.e. there will be no significant interaction effect of instructional approach and cognitive style on motivation to learn social study mean gain scores, is accepted. Thus result indicates that there is no significant difference in the gain motivation to learn social studies scores due to interaction effect of instructional strategies and cognitive style of learners.

10. Findings

1. The learners of experimental group taught through face to face collaborative learning approach gain high scores in motivation to learn social studies than that of control group taught through conventional teaching approach.

2. The two instructional treatments do not yield significant difference in motivation to learn social study mean gain scores of learners with dependent and independent cognitive style.
3. There exists no significant interaction between method of instruction and cognitive style of learners on the gain scores in motivation to learn social studies

11. Conclusion

The present study reveals that the mean gain scores in motivation to learn social studies of 7th class learners taught through face to face collaborative learning approach was significantly higher than those which were taught through conventional teaching approach. Further, the gain means with instructional strategies was not found significant differences for field dependent and field independent cognitive style learners of two groups. However, the difference in mean score for interaction across different grouping did not turn out to be significant. The study recommends the use of face to face collaborative learning approach for the enhancement of motivation to learn social studies.

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