



Effect of Interdisciplinary Strategy on Achievement in Social Science in Relation to Academic Anxiety

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ABSTRACT

The present study investigates the effect of Interdisciplinary strategy on achievement in Social Science in relation to academic anxiety. The sample consisted 100 students of class 10th selected from two different schools of Amritsar (Punjab). Instructional material based on Interdisciplinary strategy was prepared and utilized to teach the experimental group. After pre- testing and post-testing on all the students, gain scores were computed. The academic anxiety test was also administered. Mean, S.D, Analysis of Variance (2x3) and t- ratio were used to arrive at the conclusions – (i) The performance of Interdisciplinary strategy group was found significantly higher as compared to the conventional group. (ii) The performance of students with different academic anxiety group was found significant. (iii) No significant interaction effect was found between the two variables.

KEYWORDS

Interdisciplinary Strategy, Achievement, Academic Anxiety, Team Teaching, Conventional Teaching Strategies

Introduction

Ever since the appearance of the social sciences as separate domains of inquiry in the late nineteenth century, an interplay has occurred between movements for greater specialization on the one hand and efforts at interdisciplinary integration on the other hand. (Bert Hoselitz, 1959)

Social science is inherently interdisciplinary. Within the field, the various disciplines that comprise social science link and intertwine. It's difficult to imagine studying historical content without examining the roles of persons (sociology), their motivations (psychology), where they lived (geography), the influences of spiritual beliefs (religion), rules that govern behavior (political science and anthropology), or how people negotiate for their needs and wants (economics). Outside the field of social science, vital connections can also be made to language arts, mathematics, science and the arts that yield a deeper understanding of concepts and ideas. (Chadwick & Fran, 2006)

The interdisciplinary approach has been defined by Executive Director of the Association for Integrated Studies William H. Newell and William Green (1982) as "inquiries which critically draw upon two or more disciplines and which lead to an integration of disciplinary insights". The interdisciplinary approach is not different from a multidisciplinary approach, which is the teaching of topics from more than one discipline in parallel to the other, nor is it a cross disciplinary approach, where one discipline is crossed with the subject matter of another.

Interdisciplinary techniques go beyond these two techniques by allowing students to see different perspectives, work in groups, and make the synthesizing of disciplines the ultimate goal. Many interdisciplinary scholars debate whether the specific interdisciplinary technique of "team-teaching" is the best approach for student progress in the classroom. (Haynes 2002).

The interdisciplinary approach has become an important and challenging technique in the modern curriculum. The interdisciplinary approach synthesizes more than one discipline and creates teams of teachers and students that enrich the overall educational experience. In the 1930's, researchers advocated to attempt curriculum integration through joint teacher planning and block scheduling. Today, the interdisciplinary approach is a key concept to the advancement of school curriculum at all levels. It has now become debated as to whether an interdisciplinary approach is the best course for a curriculum. (Jones Casey 2009)

The Interdisciplinary approach has been used in many ways and at all levels of Education. From early childhood to graduate school, interdisciplinary studies are becoming more and more popular. Boehm explains fundamental disciplines such as Geography and History by stating, "Teachers rarely teach the two subjects in an integrated fashion, and American children's understanding of both subjects suffers (Boehm, 2003).

Anxiety is a state of mind in response to some stimulus in the environment, which brings the feelings of apprehension or fear. When the person is been exposed to the cause of anxiety the next time, the conditioning effect causes a repeat response and the person will try to avoid the cause. All the responsibilities of being an academic brings with it a state of mind referred to as "academic anxiety". This can be associated with almost all the tasks associated with academics i.e. starting from attendance to classes to the biggest cause of academic anxiety, exams. Academic anxiety arises out of the apprehension of rebuke from teachers, parents, and peers regarding the failures of performing academic responsibilities properly. Developing a state of academic anxiety causes a decrease in attention span, concentration, and memory, which can result in having a negative effect on the performance of the individual.

It is now been learnt that some level of anxiety is required for the person to take up all the responsibilities seriously but both high levels of academic anxiety or too low level has deleterious effects on academic performance, which in turn may lead to more academic anxiety. The era of competition makes students more anxious and the eagerness of whether they can do well in their academic part or perform well in academic activities may adversely affect the mental health of students. It is the painful uneasiness of mind while doing or focusing on academic activities in school or at home. If academic anxiety has not properly addressed, it can have many serious and lasting consequences, such as causing a student to procrastinate, perform poorly on schoolwork, fail in classes, and withdraw from socializing with peers. Although anxiety is a normal, even healthy part of our lives, it can be counterproductive when not managed well. Academic anxiety is a common issue that students cannot ignore if they want to succeed in school. It often leads to problems concentrating while studying and remembering information while completing tests, which makes the student, feel helpless and like a failure. Academic anxiety in children and adolescents can be challenging to recognize since it can have much in common with other disorders. According to Cornell University, "Academic anxiety is the result

of biochemical processes in the body and the brain that make your attention level increase when they occur. The changes happen in response to exposure to a stressful academic situation, such as completing school assignments, presenting a project in class, or taking a test. When the anxiety becomes too great, the body recoils as if threatened, which is a normal fight-or-flight reaction" (Banga, 2014).

The word 'Achievement' implies the act of attaining a desired end or aim. Educationally the word 'Achievement' refers to an individual's performance up to a desired level in a particular field. Achievement of a child is the focus of attention of parents, teachers, head of the institutions and society. People evaluated on the quality of their success from the very beginning when the child enters the school, and throughout his school, college, and university life. Parents and teachers are more concerned about his achievement level. Achievement is the vital factor, which affects the emotional state of mind of students. A person may be satisfied or dissatisfied with his achievement. Thus Many of the view that academic success depends on a number of factors such as intelligence, motivation, interest, attitude, values, study habits, socio-economic status, personality characteristics etc. In order to find solutions to this huge and important problem of student's failure and low achievement, it becomes necessary to locate the various factors causing low achievement. The society and parents find fault with the teachers and educational system as a whole (Parveen, 2010).

There are many possible reasons that why students fail or secured fewer marks in Social Sciences. Most of the reasons related to curriculum and methods of teaching rather than the students' lack of capacity to learn. In the traditional epoch, many teaching practitioners widely applied teacher-centered method to impart knowledge to learners comparative to student-centered methods. Until today, questions about the effectiveness of teaching methods on student learning have consistently raised considerable interest in the thematic field of educational research (Hightower et al., 2011). It is true that successful learning depends on various factors that are not all teachers related, but the methods that a teacher uses continue to play an important role in student learning and in their academic achievement. The challenges that educators face in the 21st century are so diverse that using better teaching methods is more crucial now than ever before. Gibbs and Jenkins (1992) bring the argument that the context of class and society has changed, but the teaching methods have remained unchanged. Student education has suffered the inferior pedagogy of traditional methodologies that concentrate specifically on only one discipline. The interdisciplinary approach provides many benefits that develop into much needed lifelong learning skills that are essential to a student's future learning.

Need and Significance

The proper teaching strategies help teachers in solving learners' problems and bring remarkable improvement in their overall behavior. Review of the literature shows that use of various teaching strategies gave quite positive results in comparison to traditional teaching methodology. Investigator decided to conduct research study by using Interdisciplinary strategy for teaching experimental group and conventional method for control group of students and investigate whether the use of Interdisciplinary strategy is effective or not. Academic anxiety also affects the achievement of students. Thus, the present study will give wider range of knowledge regarding the effect of Interdisciplinary strategy and relationship with student's academic anxiety in Social Science. The findings of the present study will also be helpful to assist the students to improve their learning skills in Social Science. The results of the present study will also be helpful for teachers in understanding and adopting the Interdisciplinary strategy and break the monotony of the conventional teaching methods. The investigator has made an attempt to enquire into the effect of Interdisciplinary strategy on achievements in Social Science in relation to academic anxiety.

Objectives

- To compare the performance of groups taught through Interdisciplinary strategy and conventional teaching strategy.
- To study the performance of high, average, and low academic anxiety groups.
- To examine the interaction effect between Interdisciplinary strategy and academic anxiety groups.

Hypotheses

H₁: The performance of Interdisciplinary strategy group is higher than that of conventional teaching strategy in Social Science.

H₂: The performance of low academic anxiety group is higher than that of average and high academic anxiety group.

H₃: There exists significant interaction effect between Interdisciplinary strategy and academic anxiety groups.

Sample

The present study was conducted on a random sample of 100 students of 10th class Social Science students including 50 students from the DAV Public School and 50 students from the Senior Study School, Amritsar (Punjab). It was random and purposive sample. The study was conducted on two intact groups viz. one is experimental group and other is control groups in each school. The two schools were randomly selected from the total school of Amritsar and from each school the two intact sections of 25 students were selected.

Design

For the purpose of present investigation a pre and post-test factorial design was employed. In order to analyze the data, mean, S.D, analysis of variance (2x3) and t-ratio were used for the two independent variables viz. instructional treatment and academic anxiety levels. The impact of teaching strategy was examined at two levels, namely interdisciplinary strategy and conventional teaching strategy. The classification of academic anxiety group was done at three levels viz. high, average, and low academic anxiety. The main dependent variable was the performance gain, which was calculated as the difference in post- test and pre-test scores for subject.

Tools used

The following tools were used for the collection of data:

Academic Anxiety Scale for Children by Singh and Gupta (2009) was used.

An achievement Test in Social Science was prepared by investigators.

Four Lessons in Social Science (such as Physical Features of India, Drainage System, Climate and Natural vegetation and Wildlife) based on Interdisciplinary strategy and conventional teaching prepared by the investigators.

Procedure

After the selection of the sample and allocation of students to the two instructional strategies, the experiment was conducted. Firstly, students were randomly assigned to control and experimental group. Secondly, the test of academic anxiety was administered in each school, in order to identify academic anxiety levels of the students. Thirdly, a pre-test was administered to the students of experimental and control groups. The answer-sheets were scored to obtain information regarding the previous knowledge of the students. Fourthly, one group was taught through Interdisciplinary strategy and control group was taught through conventional teaching strategy by the investigators. Fifthly, after the completion of the course, the post- test was administered to the students of both the groups. The answer-sheets were scored with the help of scoring key.

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 strategies of teaching and academic anxiety levels. The mean and standard deviation of different sub groups have been presented in table- 1, 2 & 3.

Table-1: Means and SD of Gain Achievement Scores for the Different Sub Groups

Academic Anxiety Level	Teaching						Total		
	Interdisciplinary Strategy			Conventional Teaching Strategy					
	N	Mean	SD	N	Mean	SD	N	Mean	SD
High Academic Anxiety	13	3.30	2.13	13	2.15	1.51	26	2.73	1.93
Average Academic Anxiety	24	4.00	3.43	24	2.16	1.75	48	3.08	2.87
Low Academic Anxiety	13	6.15	2.66	13	2.85	1.99	26	4.50	2.86
Total	50	4.38	3.14	50	2.34	1.78	N= 100		

Source: Field Study, 2016

Table-1 observes that the mean gain scores of Interdisciplinary strategy (M=4.38) is higher than the conventional teaching strategy (M=2.34). This shows that Interdisciplinary strategy is more effective than the conventional teaching strategy. It is also confirmed that the mean of the three groups' i.e. high, average, and low academic anxiety group is 2.73, 3.08, and 4.50 respectively. It is concluded that the gain mean scores with Interdisciplinary strategy has shown significant differences for high, average, and low academic anxiety students. These differences are also found with respect of the different academic anxiety group taught through conventional teaching strategy.

Analysis of Variance on Gain Achievement 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

Table-2: Summary of Analysis of Variance (2x3) Factorial Designs

Source of Variance	Sum of Squares	df	Sum of Squares Mean	F- ratio
Interdisciplinary Strategy (A)	104.04	1	104.04	16.59**
Academic Anxiety (B)	47.75	2	23.87	3.81*
Interaction (AB)	16.06	2	8.03	1.28
Error	589.19	94	6.27	

* Significant at 0.05 level * *Significant at 0.01 level

(Critical Value 3.95 at 0.05 and 6.92 at 0.01 levels, df 1/94)

(Critical Value 3.10 at 0.05 and 4.85 at 0.01 levels, df 2/94)

Main Effect

Problem Solving Strategy (A)

Table -2 reveals that that the F-ratio for difference in mean gain scores of Interdisciplinary strategy and conventional teaching strategy group is 16.59, 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: The performance of Interdisciplinary strategy group is higher than that of conventional teaching strategy group in social science, is accepted .The result indicates that the performance of Interdisciplinary strategy group was more effective than that of the conventional teaching strategy group in social science.

Academic Anxiety Level (B)

Table-2 shows that the F-ratio for difference in mean gain scores of the three groups of academic anxiety are 3.81,

which in comparison to the table value was found significant at 0.05 level of significance. It suggests that the three groups were different with respect of achievement scores. Hence, the hypothesis H₂ : The performance of low academic anxiety group will be higher than that of average and high academic anxiety group in social science, is accepted. The result indicates that the performance of students in social science taught through Interdisciplinary strategy has significant differences for low, average, and high academic anxiety groups.

In order to probe deeper, the ratio was followed by t-test. The value of the t-ratio for the different combinations of academic anxiety level have been given in table-3

Table-3: t-ratio for different combinations of Academic Anxiety levels

Source of Variance	Sum of Squares	df	Sum of Squares Mean	F- ratio
Interdisciplinary Strategy (A)	104.04	1	104.04	16.59**
Academic Anxiety (B)	47.75	2	23.87	3.81*
Interaction (AB)	16.06	2	8.03	1.28
Error	589.19	94	6.27	

*Significant at 0.05 level **Significant at 0.01 level

(Critical Value 2.00 at 0.05 and 2.65 at 0.01 levels, df 72)

(Critical Value 2.01 at 0.05 and 2.68 at 0.01 levels, df 50)

Table -3 shows that the t-ratio for the difference in gain mean scores of high and average academic anxiety groups is 0.63, which in comparison to the table value was not found significant even at 0.05 level of significance. Hence, the hypothesis of significant differences is rejected in case of high and average academic anxiety irrespective of grouping across other variable. The result indicates that high academic anxiety group and average academic anxiety group was not significantly different with respect of gain scores.

Table -3 shows that the t-ratio for the difference in gain mean scores of high and low academic anxiety groups is 2.62, which in comparison to the table value was found significant at 0.05 level of significance. Hence, the hypothesis of significant differences is accepted in case of high and low academic anxiety irrespective of grouping across other variable. This infers that low academic anxiety group performs significantly better than that of high academic anxiety group on achievement in mathematics with respect of gain scores.

Table-3 shows that the t-ratio for the difference in gain mean scores of average and low academic anxiety groups is 2.04, which in comparison to the table value was found significant at 0.05 level of significance. Hence, the hypothesis of significant differences is accepted in case of average and low academic anxiety irrespective of grouping across other variable. This infers that low academic anxiety group performs significantly better than that of average academic anxiety group on achievement in social science with respect of gain scores.

Interaction Effect (A x B)

Table-2 reveals that the F- ratio for the interaction effect between Interdisciplinary strategy and academic anxiety groups is 1.28, which in comparison to the table value was not found significant even at 0.05 level of significance. It indicates that the two variables do not interact with each other. Thus, hypothesis H₃ : There exist significant interaction effect between Interdisciplinary strategy and academic anxiety, is rejected. The result indicates that the Interdisciplinary strategy group and academic anxiety group did not interact with each other on achievement in social science with respect of gain scores.

Discussion

The result of the present investigation has lead to the conclusion that Interdisciplinary strategy yields higher levels of achievement in social science as compared to the conventional teaching strategy group. The hypothesis H1 was accepted.

The finding of Haynes (2002), Staples (2005) and Paterson (2005) support the results. Zakaria, Chin & Daud (2010) also specified that teaching should not merely focus on dispensing rules, definitions and procedures for students to memorize, but should also actively engage students as primary participants. In a study done by Boyer and Bishop (2004) titled "Young Adolescent Voices", found interdisciplinary teaming not only had a positive effect on students learning, but also inhibited personal growth.

Slavin (1996) found that contrary to traditional teaching methods, Interdisciplinary instruction produces significantly positive results in students' performance and also motivates goal-orientated behavior among students, hence the method is very effective in improving student achievement.

The performance of students in social science taught through Interdisciplinary strategy has shown significant differences for high, average, and low-level academic anxiety groups. Hence, the hypothesis H_2 was accepted. Hancock (2001) revealed that students with high anxiety level, performed poorly and were less motivated to learn. Anxiety was found to have a significant negative correlation with academic achievement for the total sample, arts and science groups, and girls, boys of arts groups and girls of science groups, science girls of middle socio-economic status, internal boys of the arts curriculum and external girls of the arts curriculum. (Gupta, 1987). The result are consisted with the findings of Trivedi(1995) reported that no significant difference existed between the means of boys and girls, science and commerce streams, science and arts stream in respect of their anxiety level. However, there had been significant differences between the means of the students of commerce and arts streams.

The performance of problem solving strategy was not found interacting with each other at different levels of academic anxiety. Hence, hypothesis H_3 was rejected.

Findings

1. The performance of students taught through Interdisciplinary strategy group was significantly higher than that taught through conventional teaching strategy group in social science.
2. The mean gain scores of low academic anxiety group were higher than that of average, and high academic anxiety group in social science.
3. No significant interaction effect was found between Interdisciplinary strategy group and academic anxiety group.

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