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Effects of collaborative learning strategy on achievement in geography among secondary school peers

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Abstract
The present study is intended to find out the "effects of Collaborative learning strategy" on achievement in Geography among secondary school peers. This strategy has been designed with achievement in Geography as dependent variable and Collaborative learning strategy and existing learning method as independent variables. The investigator adopted experimental method for the investigation and the experimental design selected was pre-test post-test non equivalent group design. The major tools were lesson transcripts based on Collaborative learning strategy and existing learning method and a standardised achievement test. Considering the nature of the study stratified random sampling technique was used. To conduct the study a sample of 88 IXth standard students following Kerala state syllabus from Malappuram district of Kerala state were selected. The data collected were subjected to statistical analysis by using Critical Ratio and ANCOVA. Analysis of pre-test and post-test scores reveals that Collaborative learning strategy is more effective than existing earning method on achievement in Geography among secondary school peers.

Keywords: collaborative learning strategy, existing learning method, achievement in geography

Introduction

Learning is often seen as an individual process. Although it is certainly true to say that pupils need to internalize learning on an individual basis, it is important to provide opportunities for pupils to work together. Working in groups can promote more effective learning, particularly when it encourages creativity or the clarification of understanding. This notion reflects some of the shifts in conceptions of the learner that have taken place over the years. These conceptions place far more emphasis on the social nature of learning. Bruner and Haste (1987) argue that "making sense" is a social process' and stress the importance of the social setting in classroom learning. Bruner was influenced by the work of Vygotsky (1978) [12] who argued that social interaction plays a central role in facilitating learning.

When managed effectively, working in groups can promote the development of a range of valuable learning and interpersonal skills. If the pupils are 'active' for a large part of time, working in groups can increase their enthusiasm and motivation to learn. It can also help to build – up their self confidence to share ideas and opinions. Talking through ideas helps pupils to test out their thoughts and improve their understanding. Where open- ended tasks are used as the focus for work in groups there are likely to be more opportunities for pupils to explore areas and ideas they are interested in at their own levels (Robinson and Serf, 1997). In the longer term, this will enable pupils to take more responsibility for their own learning. It will also help them use and value their own experiences as well as those of other pupils. Collaborative activities provide opportunities for them to practice and improve their communication skills. Encouraging pupils to discuss geographical ideas in a purposeful way helps facilitate learning in geography. The process of selecting, organizing and presenting ideas during discussion will reinforce and enhance conceptualization. Stimpson argues that 'whilst other approaches such as reading followed up by comprehension exercises or direct teacher exposition are generally more effective ways of transmitting factual knowledge, discussion is probably better in generating long lasting understanding (1994, p. 154). Discussion involves a search for correct explanations with concepts being retrieved from long- term memory to be 'reviewed and re- established' (ibid, p. 154). As pupils talk through their interpretations, so their understanding increases. Jacobson and colleagues (1981) suggest that discussion helps pupils learn how to summarise group opinion, handle controversy, search for consensus, use self- directed learning skills and use higher order thinking skills such as those of analysis, synthesis and evaluation.

To be effective, learning in groups must involve genuine collaboration and purposeful activity. Pupils may sit in groups in many classrooms but most of the times they are working independently and only occasionally are they involved in any collaborative learning activity or required to share answers. This is usually because the tasks that are given to the groups do not require collaboration or co-operation. The main advantages of learning in groups are therefore lost.

Collaborative strategies can require a 'leap of faith' for many teachers who feel more confident when using other teaching strategies. Sometimes small group work fails to achieve its potential leading to a reluctance to use similar strategies again. Typical concerns relate to the breakdown of groups, the difficulty of keeping all pupils actively engaged in the task and worries about time being wasted. Others are uncertain about the value of pupil comments or lack confidence in their ability to assess these contributions and shape the understanding that is developing through the discussion that is taking place.

The size and composition of pupil grouping is a particularly

important issue influencing the success of collaborative learning activities. The gender and ability composition of groups is another important issue. Studies comparing ability and mixed –ability co-operative groups have raised substantial doubts about some aspects of ability grouping. Designing and presenting appropriate tasks is one of the biggest challenges facing teachers when using collaborative strategies. A distinction must be made between tasks demanding action talk and abstract talk (Bennet and Dunne, 1992). This distinction is derived from Piaget's (1959) ideas about the development of children's conversations whereby tasks which demand no more talk related to the ongoing action of the moments are distinguished from those which demand explanations or reconstruction.

One of the most common ways of organizing collaborative learning in Geography is through the use of various types of card sorting activities. Such activities are an effective and flexible way of providing a focus and structure for small group work. They can help to overcome the anxieties of the learner. In particular, they provide a focus for discussion between pupils as well as a focus for teacher intervention and monitoring of learning during activity. Nash (1997) identifies a range of benefits from using card sorting activities as a focus for small group work.

Cards can be used effectively to support observational activities where pupils are identifying geographical features and describing landscapes and use patterns. This could involve matching terms or descriptions on cards can be temporarily fixed to display paper and arrows drawn using marker pens to label these features. Pupils could then write further information onto the display paper, for example, to suggest geographical questions that could be stimulate enquiry.

Card sorting activities can be used effectively to develop pupils' knowledge and understanding of geographical terms. They can also be used in a purposeful way to provide opportunities for pupils to search for pupils to search for relationships in geographical data, and to suggest explanations and generalisations. Information about particular geographical processes or events can be written on cards which pupils have to organize into some sort of order; for example, into a flow diagram explaining these processes or events.

Objectives

1. To prepare the instructional material for teaching Geography in standard IX based on Collaborative learning strategy.
2. To find out the effectiveness of Collaborative learning strategy on achievement in Geography among secondary school pupils.

Hypothesis

The Collaborative learning strategy is more effective than the existing method in teaching Geography at the secondary level.

Materials and methods

Methodology

The method adopted for the present study is experimental method. Experimental verification is necessary to determine the effectiveness of collaborative learning strategy over existing method.

Sample

A sample of 88 IXth standard students, following Kerala State Syllabus from Malappuram district of Kerala State was selected by using stratified random sampling technique.

Tools used

1. Lesson transcripts based on Collaborative learning strategy.
2. Lesson transcripts based on Existing learning method.
3. Achievement test in Geography.

Statistical techniques used

The data collected was classified, tabulated, analysed and interpreted by using various descriptive statistical techniques such as Mean, Median, Standard deviation, Quartile deviation, Critical ratio and ANCOVA.

Results and discussion

Data analysis and interpretation

Table 1: Summary of Analysis of Covariance of pre-test and post-test scores of pupils in experimental and control groups

Source of Variation	Df	SSx	SSy	SSxy	SSyx	MSyx(Vyx)	SDyx
Among means	1	11.64	336.19	63.23	147.52	147.52	√1.52=1.23
Within groups	85	353.16	1176.41	608	129.68	1.52	
Total	86	364.80	1512.6	671.23			

Fyx = 147.52/ 1.52 = 97.05
Frtom table of F- ratios, df 1/85
F at 0.05 level = 3.95
F at 0.01 level = 6.92
T = 10.03

The obtained Fyx ratio was tested for significance. Since the table value of F- ratio for df 1/85 is at 0.01 level, the obtained Fyx ratio is highly significant (Fyx = 97.05, P< 0.01). It is clear from the significant Fyx ratio that the two final means – which depend upon the experimental and control variables – differ after they have been adjusted for initial difference in X.

Comparison of adjusted Y means

The adjusted means of post- test scores (y means) of pupils in the experimental and control groups were computed. The difference between the adjusted Y means was tested for significance. The data, the adjusted means of post- test scores of pupils in experimental and control groups are given in the table below.

Table 2: Computation of data for adjusted means of post – test scores of pupils in experimental and control groups

groups	N	Mx	My	Myx (Adjusted)
experimental	44	5.97	15.52	14.9
control	44	5.25	11.6	12.29
General Means		5.6	13.56	13.59

SE_D between the adjusted means = 0.26
Significant difference at 0.05 level = 0.52
Significant difference at 0.01 level = 0.68
Obtained difference (14.9 – 12.29) = 2.61
From table D, df 1/85
t at 0.05 level = 1.99
t at 0.01 level = 2.63

The difference between the adjusted means of post- test scores of the pupils in the experimental and control groups is 2.61. The significant difference between the adjusted 'Y' means calculated is 0.52 at 0.05 level and 0.68 at 0.01 level. Since the difference between the adjusted 'Y'means is greater than the significant difference at the 0.01 level, it is highly significant.

The significant difference between the adjusted 'Y' means indicates that the pupils of the experimental and control groups differ significantly in their achievement in the post – test. Since the adjusted means of post – test scores of pupils in the control group, the experimental group is superior to the control group in academic achievement. It may therefore be concluded that the pupils taught by collaborative learning method have better academic achievement in history than those taught by existing method.

Conclusion

For the past three decades, educators have recognized the value of learning collaboratively. Educators widely recognize that students do not learn well when they are isolated "receivers" of knowledge. Educators can use various strategies of collaborative learning along with their instructional technique to enhance learning in a classroom. When managed effectively working in groups can promote the development of a range of valuable learning and interpersonal skills. Collaborative learning will increase their enthusiasm and motivation to learn. It also helps to build-up their self confidence to share ideas and opinions. In the longer term, this will enable pupils to take more responsibility for their own learning. In conclusion, collaborative learning provides a toll to the educators to in cooperate values in providing quality education. It needs a culture that values every student's strengths and a school community that believes everyone can learn from each other.

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