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Effect of Think-Pair-Share Strategy on Academic Achievement in Biological Science Students at Senior Secondary Level

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Abstract

The present study is to know the effect of Think-Pair-Share strategy on academic achievement in Biological science students at senior secondary level by using pre-test-post-test control group quasi experimental design. Three tools namely performance test of Intelligence by Ahuja (2012), Socio economic Status scale by Kalia and Sahu (2012) and Achievement test of Biological science developed by the investigator were used for the collection of data. A random sample of 80 students of class 11th were taken for this study. The students of control group were taught by traditional method and experimental group were taught by Think-Pair-Share strategy. The findings of the study indicated that the students of the experimental group showed better performance in Biological Science as compared to the students of the control group. Here we can say Think –Pair-Share strategy is effective in teaching of Biological Science to Senior secondary school students. Further TPACK also has a role, if sense of humour goes for increase one unit ,TPACK will increase by 0.08 units and Professional commitment will increase by 0.154 units (DR U MALIK 2020) it ultimately result in effective implementation of Think-Pair –Share strategy.

Keywords- Think-Pair-Share strategy, Academic Achievement, Biological Science, Senior Secondary School Students

Introduction

Now a days in the time of pragmatism and constructivism things are happening at a very random pace. The speed can`t be judged easily between two individuals, between two societies, between two countries, between two civilizations. A lot of work has been done to study this cause and a lot has to be yet to be done.The effect of cooperative learning on social science achievement (Kosar ,2003). In this experiment of two weeks, cooperative learning resulted in higher achievement as compared to routine method of teaching social science. Urban students had higher academic achievement than rural students (Nuthana ,2007). Think-Pair-Share strategy is first developed by Prof. Frank Lyman in 1981. Think-Pair-Share strategy helps to make the students more active in the teaching-learning process by discussing with their classmates. . This is very innovative strategy in teaching learning process. The think-pair-share strategy is a strategy designed to provide students to think a given topic by enabling them to formulate individual ideas and share these ideas with another student. "The collaborative learning with Think-Pair-Share technique was found that this system aids the students in order to promote active learning in computer based learning environment" (Tint and Nyunt , 2015)." The Influence of Think-Pair-Share on Improving Students' Oral Communication Skills in EFL Classrooms" (Raba, 2017).

Objectives of the Study

- To compare the Pre-test mean achievement scores of control and experimental group.
- To compare the Post-test mean achievement scores of control and experimental group.

- To compare the mean gain achievement scores of control and experimental group.

Hypotheses of the Study

- There is no significant difference in the Pre-test achievement scores of control and experimental group.
- There is no significant difference in the Post-test achievement scores of control and experimental group.
- There is no significant difference in the mean gain achievement scores of control and experimental group.

Methods

In the design, pre-test post-test control group, quasi experimental design was employed. A random sample of 80 students studying 11th class was selected. Two groups i.e. the control group and the experimental group was formed after matching the intelligence and socio-economic status of students.

Tools

A. Standardised Tools

- Group Test of Intelligence by Ahuja (2012)
- Socio-Economic Status Scale by Kalia and Sahu (2012)

B. Self Developed Tools

- Achievement Test on Biological Science(developed and standardized by the investigator).
- Think-Pair-Share strategy package for class 11th students

Experimental Procedure

The experiment comprised of two main stages:(1) Selection of the sample (2)Conducting the experiment. 80 students were selected i.e. 40 for control group and 40 for experimental group. The experiment was conducted in three stages as given in Table-1

Table 1 Phases of the Study

Stages	Group	
	Experimental Group	Control Group
1.Pre-testing	Measurement of Student's 1. Intelligence 2. SES 3. Achievement in Biological Science	Measurement of Student's 1. Intelligence 2. SES 3. Achievement in Biological Science

2.Treatment	Teaching Biological Science through Think-Pair-Share strategy	Teaching Biological Science through Conventional method
3.Post-testing	Measurement of Student's Achievement in Biological Science	Measurement of Student's Achievement in Biological Science

Statistical Analysis

Mean, Standard deviation, t-test were used to analyse the data.

Results

The pre and post-test scores of experimental group and control group were obtained through an Achievement test and were analyzed and described by using descriptive and inferential statistics.

The data were analyzed for the total Achievement scores for both the groups.

Table 2 't'-value for Difference in the pre-Test Mean Achievement Scores of Experimental group and Control Group

	Group	N	Mean	S.D.	S.EM	't' value	Level of Significance
Pre-test	Control Group(A1)	40	20.18	4.28	0.68	0.869	Not Significant
	Experimental Group(A2)	40	21.02	4.36	0.69		

Table 2 reveals the t-value of 0.869 for the difference in pre-test mean achievement scores of experimental and control group before the experiment is not significant at 0.01 and 0.05 levels of significance. Figure-1, it is found that pre-test mean achievement scores of experimental group(21.02) and control group (20.18) does not differ significantly. Thus null hypothesis Ho1 i.e**.**

"There is no significant difference of the pre-test mean achievement scores of control and experimental group" is retained.

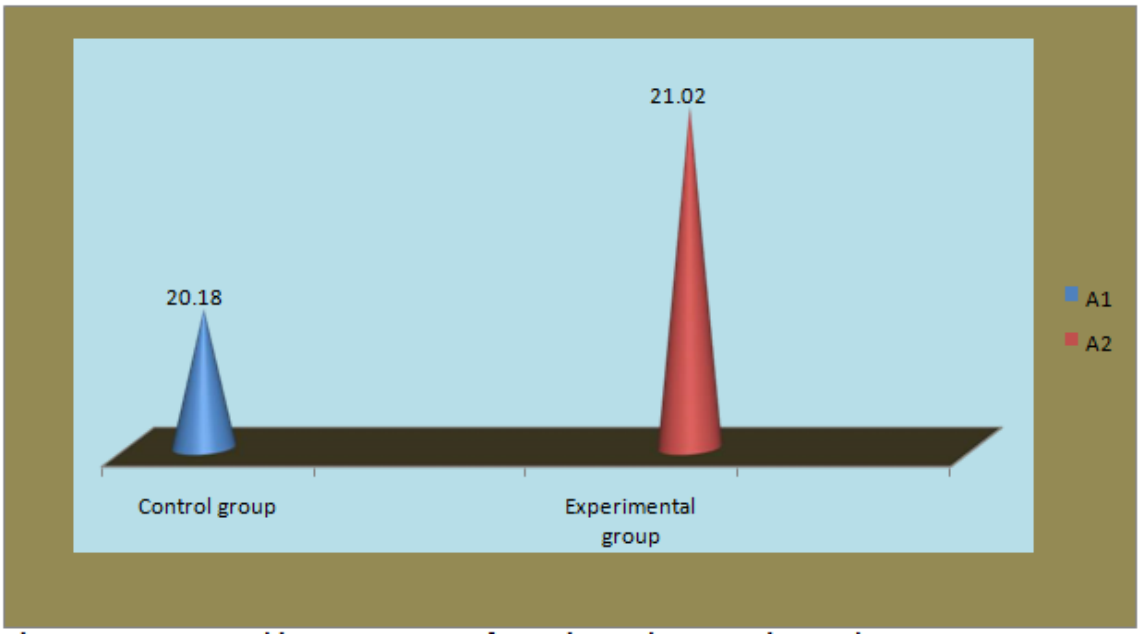

Fig. 1 Pre-test mean Achievement scores of Experimental group and Control group

H02: There is no significant difference of the pre-test mean achievement scores of control and experimental group.

Table 3 t-value for Difference in the post-test mean Achievement Scores of Experimental and Control Group

	Group	N	Mean	S.D.	S.EM	't' value	Level significance of
Post-test	Control Group(A1)	40	33.80	3.60	0.57	5.790	Significant at 0.01 level
	Experimental Group(A2)	40	39.26	4.75	0.75		

Table 3 reveals the t-value of 5.790 for the difference in post-test mean achievement scores of experimental and control group is significant at 0.01 and 0.05 levels of significance. It shows that there is significant difference between the post-test mean achievement scores of experimental group and control group of 11th class students in Biological science. When results are compared in the context of the post-test mean achievement scores. Figure-2, it is found that post-test mean achievement scores in Biological Science of Think-Pair-Share strategy package teaching group (39.26) is higher than traditional

method teaching group (33.80).Thus null hypothesis Ho2**i.e.''There is no significant difference of post-test mean achievement scores of control and experimental group"** is rejected. The present result is in tune with the results of Bamiro (2015)who observed the effects of guided discovery and Think- Pair-Share strategies on secondary school students' achievement. It may therefore conclude that Think-Pair-Share strategy package helps in enhancing the achievement of the students in Biological Science in comparison to the traditional teaching method.

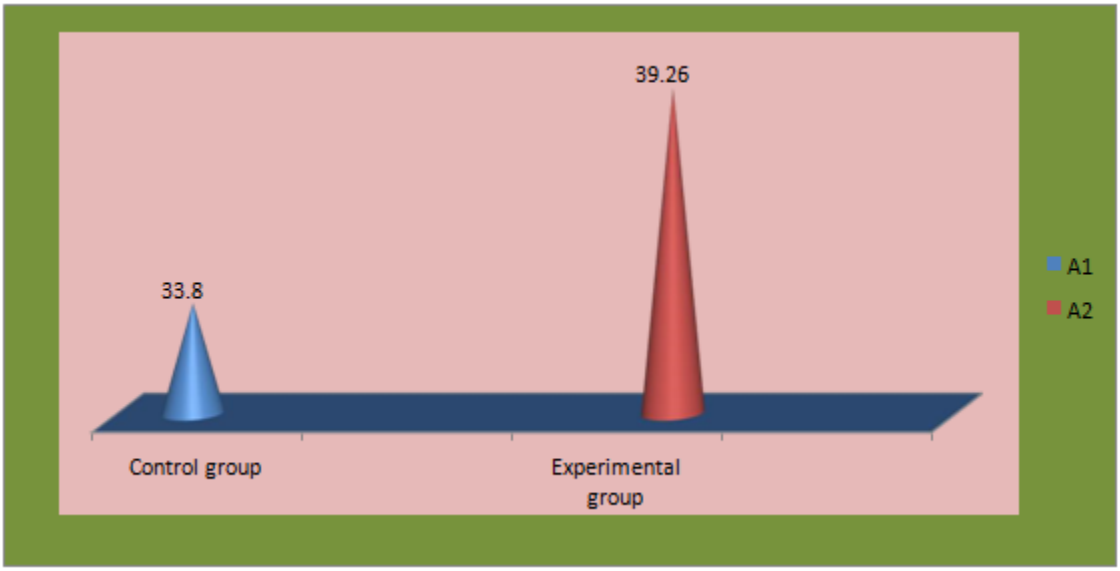

Fig. 2 Post-test mean Achievement Scores of Experimental and Control group

H03: There is no significant difference between the mean gain achievement scores of control and experimental group

Table 4 t- value for Difference in the Mean gain Achievement Scores of Control Group and Experimental Group

	Group	N	Mean	S.D.	S.EM	't' value	Level of Significance
Mean gain	Control Group(A1)	40	12.62	5.66	0.89	4.25	Significant at 0.01 level

	Experimental Group(A2)	40	18.24	6.16	0.97		

Table 4 reveals the t-value of 4.25 for the difference in post-test mean gain achievement scores of experimental and control group is significant at 0.01 and 0.05 levels of significance. It shows that there is significant difference between the post-test mean gain achievement scores of experimental group and control group of 11th class students in Biological Science. When results are compared in the context of the post-test mean gain achievement scores.Figure-3, it is found that post-test mean gain achievement scores in Biological Science of Think-Pair-Share strategy package teaching group (18.24) is higher than traditional method teaching group (12.62).Thus null hypothesis Ho3**i.e. "There is no significant difference of post-test mean gain achievement scores of control and experimental group"** is rejected. It may therefore conclude that Think-Pair-Share strategy package helps in enhancing the achievement of the students in Biological Science in comparison to the traditional teaching method.

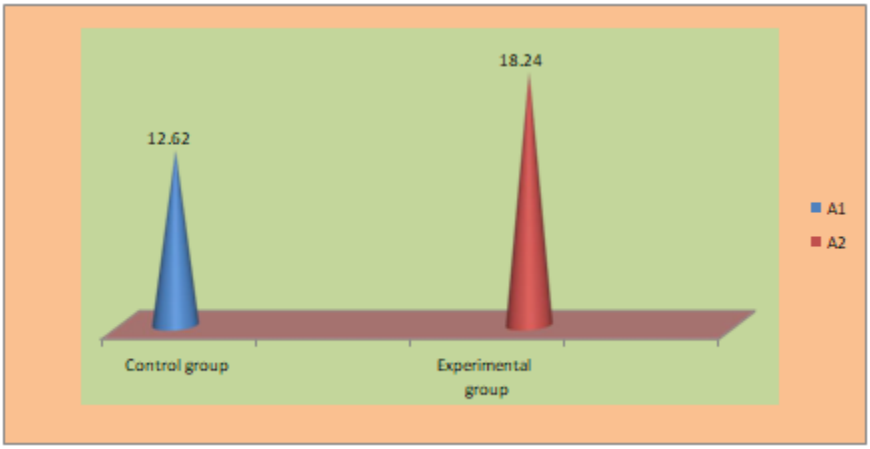

Fig.3 Mean Gain Achievement Scores of Control Group and Experimental Group

Discussion of the Results

The findings of the study revealed that students of Experimental group and Control group did not differ significantly on their pre-test scores. A significantly difference was found between post-test scores of Experimental group and control group. Experimental group was found to have higher scores on achievement as compared to the students in Control group. Significant difference was found between Mean gain scores of the Control group and Experimental group. The Experimental group showed higher gain score as compared to their counter parts.

Conclusion

The present study has generated some interested findings concerning the benefits of using ThinkPair-Share strategy as compared to the traditional method of teaching. The results indicate that

Think-Pair-Share strategy significantly improved student's performance in the achievement test.

There was significant difference in student's achievement when the students who were taught through Think-Pair-Share strategy were compared to those taught using traditional methods.

Think-Pair-Share strategy seemed to be very effective in enhancing student's conceptual understanding. The reason for this achievement was mostly attributed to the special features of Think-Pair-Share strategy. It can, therefore that Think-Pair-Share strategy is effective for teaching of Biological science. The study provides potential inputs for teacher education. As Think-Pair-Share strategy is more effective than traditional approach, teachers should use the Think-Pair-Share strategy based instructions for Biological Science subject so that students are actively involved in learning rather than passively.

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