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2. Effectiveness of STAD and Jigsaw II Techniques of Cooperative Learning on Language Reading Proficiency Skill of Pre-Service Teachers

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Abstract

The present study aims to examine the effectiveness of Student Teams Achievement Divisions (STAD) and Jigsaw II techniques of Co-operative Learning on English Language Reading Proficiency Skill of Pre-Service Teachers. The present study was quasi-experimental by nature and designed on the lines of Non-Equivalent Pre-test Post-test control group design. The sample was comprised of 133 pre-service teachers enrolled in B.Ed course. The data were analysed with the help of Analysis of Covariance with Treatment, Medium of Instruction and Subject Stream as independent variables and Reading Proficiency as dependent variable. The findings of the study revealed that STAD and Jigsaw II were not found to be superior to Traditional Method with respect to Reading Proficiency. English Medium students were found to have significantly better Reading Proficiency than Vernacular Medium students. Moreover, STAD was found to be more beneficial for science students while Jigsaw II and Traditional Methods more beneficial for Humanities students.

Key Words: STAD, Jigsaw II, Cooperative Learning, Language Reading Proficiency Skill

Introduction

Language Reading Proficiency skill is the ability to comprehend as well as interpret text at the age and grade of appropriate level. The ability to read is one of the aspects of language use and, just like speaking or writing, it requires a certain amount of practice and teaching to improve, something which usually happens in one's early years of school. Teachers of English as a foreign language have the crucial role of helping students develop their reading capacities in a new language, which has its own characteristics and difficulties and requires great effort on the part of the learners. Teachers are faced with the arduous task not only of teaching new grammar

rules and vocabulary, but they also have to help students understand the meaning of what they read depending on the purpose and the communicative context in which they are using the language. Therefore, teachers can try to find the most suitable methods only by interacting with their student's day by day and adapting lessons to the learners' needs in that particular situation.

Cooperative learning has been recommended as the remedy for wider perspectives of educational problems. Cooperative learning methods provide opportunities for learners to develop skill-in-group interactions and in working with others that are needed in today's world. Cooperative learning also contributes in positive effect on students' achievement in versatile areas and retention of information (Slavin,1991).In this advanced educational arena, versatile Cooperative learning methods and strategies are successfully practised throughout the world. The most prominent Cooperative learning methods practised in different educational circles are: Student Teams Achievement Divisions (STAD) and Jigsaw II. The major principle behind STAD technique is that learners cooperate to learn and be held accountable with respect to their teammates and their own achievements. In Jigsaw II classrooms, group members work together as a team to accomplish a common goal; each person depends on all the others. The sense of cooperation facilitates positive interaction among all students in the class thus encouraging them to value each other as contributors to their common task.

Objectives of the Study

The study was conducted to realize the following objectives:

1. To develop and validate the English Language reading proficiency tests.
2. To study the effect of treatment, medium of instruction, subject stream and their interaction on English reading proficiency of students by considering pre-reading proficiency as covariate.

Hypotheses

H1: There is no significant effect of Treatment on Reading Proficiency of students by considering Pre-reading Proficiency as covariate.

H2: There is no significant effect of Medium of Instruction on Reading Proficiency of students by considering Pre-Reading Proficiency as covariate.

H3: There is no significant effect of Interaction between Treatment and Medium of Instruction on Reading Proficiency of students by considering Pre- Reading Proficiency as covariate.

H4: There is no significant effect of Subject Stream on Reading Proficiency of students by considering Pre-Reading Proficiency as covariate.

H5: There is no significant effect of Interaction between Treatment and Subject Stream on Reading Proficiency of students by considering Pre- Reading Proficiency as covariate.

Methodology

The present study was quasi-experimental by nature. In the study, English Language Reading Proficiency Skill was the dependent variable. Medium of instruction (English V/S Vernacular language) at previous levels and Subject stream (Science V/S Humanities) were the independent classifying variables. Cooperative learning techniques (STAD and Jigsaw-II) were treatment variables.

Sample

The sample was comprised of 133 pre-service teachers enrolled in B.Ed course. Three intact sections were taken; randomly two sections were selected as Experimental groups (E₁ and E₂) and third section as control group(C).

Design of the Study

Being experimental in nature, the study was designed on the lines of Non-Equivalent Pre test-Post test control group design.

Procedure

The procedure was facilitated through three phases. In phase I, a pre-test meant for assessing English language Reading proficiency, was administered to the selected sample. In the phase II, Control group was exposed to treatment through conventional method of teaching/ individualistic learning whereas Experimental group E₁ was exposed to treatment T₁ through Student Team Achievement Division (STAD) and Experimental group E₂ was exposed to treatment T₂ through Jigsaw II. Three groups were subjected to the treatments for 40 hours each spread over 40 days. In the phase III, a post-test meant for assessing English Language Reading proficiency was administered to the three groups.

Tools for the Study: The following tools were used to collect the data:

1. **Language Reading Proficiency Test in English** (developed by the investigator) was administered to study the Language Reading proficiency skill of the pre-service teachers.
2. **Language Reading Proficiency Modules in English** (developed by the investigator based on STAD and Jigsaw II techniques) were administered to the experimental groups.

Analysis

Effect of treatment, medium of instruction and their interaction on reading proficiency of students by considering pre-reading proficiency as covariate

There were three levels of Treatment, namely, STAD, Jigsaw II and Traditional Method for Teaching Reading Proficiency. The students were categorized into two levels of Medium of Instruction, namely, English Medium Group and Vernacular Medium Group. Thus, there were three levels of Treatment and two levels of Medium of Instruction. Therefore, the data were analysed with the help of 3×2 Factorial Design Analysis of Covariance with Treatment and Medium of Instruction as independent variables & Reading Proficiency as dependent variable. The results are presented in table 1.

Table 1 : Summary of 3×2 Factorial Design ANCOVA of Reading Proficiency

| Source of Variance | $SS_{y,x}$ | df | $MSS_{y,x}$ | $F_{y,x}$ |
|---------------------------|------------|-----|-------------|-----------|
| Treatment (A) | 1.59 | 2 | 0.79 | 0.15 |
| Medium of Instruction (B) | 25.25 | 1 | 25.25 | 4.92* |
| A \times B | 25.05 | 2 | 12.52 | 2.44 |
| Error | 646.51 | 126 | 5.13 | |
| Total | 2148.39 | 132 | | |

* Significant at 0.05 level

Effect of Treatment on Reading Proficiency

From the Table 1, it can be seen that adjusted F-Value for Treatment is 0.15, which is not significant at 0.05 levels with $df = 2/126$. It indicates that the mean scores of Reading Proficiency for STAD, JigsawII and Traditional Method Groups do not differ significantly. It reflects that there was no significant effect of Treatment on Reading Proficiency of students. In this context, the null hypothesis, namely, "There is no significant effect of Treatment on Reading Proficiency of students by considering Pre- Reading Proficiency as covariate", is not rejected. It may, therefore, be said that the STAD and Jigsaw II were not found to be superior to Traditional Method with respect to Reading Proficiency when Pre-Reading Proficiency was taken as covariate.

Effect of Medium of Instruction on Reading Proficiency

From the Table 1, it can be seen that adjusted F-Value for Medium of Instruction is 4.92, which is significant at 0.05 levels with $df = 1/126$. It indicates that the adjusted mean scores of Reading Proficiency of students belonging to English Medium and Vernacular Medium Groups differ significantly when Pre-Reading Proficiency was considered as covariate. In this context, the null hypothesis, namely, "There is no significant effect of Medium of Instruction on Reading Proficiency of students by considering Pre-Reading Proficiency as covariate", is rejected.

Further, the unadjusted (adjusted) mean score of Reading Proficiency of English Medium Group was 17.67 (15.8), which is significantly higher than that of Vernacular Group whose unadjusted (adjusted) mean score of Reading Proficiency was 13.88(14.76). It reflects that students having English as Medium of Instruction were found to be significantly superior to the student having Vernacular as Medium of Instruction in terms of Reading Proficiency when both groups were matched with respect to Pre-Reading Proficiency. It may, therefore, be said that English Medium students were found to have significantly better Reading Proficiency than Vernacular Medium students when Pre-Reading Proficiency was taken as covariate.

Effect of Interaction between Treatment and Medium of Instruction on Reading Proficiency

From the Table 1, it may be observed that the adjusted F-value for Interaction between Treatment and Medium of Instruction was 2.44, which is not significant at 0.05 levels with $df=2/126$. It indicates that there was no significant effect of the resultant of the Interaction between Treatment and Medium of Instruction on Reading Proficiency when Pre- Reading Proficiency was taken as covariate. In this context the null hypothesis, namely, “There is no significant effect of Interaction between Treatment and Medium of Instruction on Reading Proficiency of students by considering Pre- Reading Proficiency as covariate”, is not rejected. It can, therefore, be said that Reading Proficiency was found to be independent of the Interaction between Treatment and Medium of Instruction when groups were matched with respect to Pre-Reading Proficiency.

Effect of treatment, subject stream and their interaction on reading proficiency of students by considering pre-reading proficiency as covariate

There were three levels of Treatment, namely, STAD, JigsawII and Traditional Method for Teaching Reading Proficiency. The students were categorized into two levels of Subject Streams, namely, Science Group and Humanities Group. Thus, there were three levels of Treatment and two levels of subject stream. Therefore, the data were analysed with the help of 3×2 Factorial Design Analysis of Covariance with Treatment and subject stream as independent variables & Reading Proficiency as dependent variable. The results are presented in table 2.

Table 2 : Summary of 3×2 Factorial Design ANCOVA of Reading Proficiency

| Source of Variance | SS _{y,x} | df | MSS _{y,x} | F _{y,x} |
|--------------------|-------------------|-----|--------------------|------------------|
| Treatment (A) | 1.287 | 2 | 0.64 | 0.12 |
| Subject Stream (B) | 8.76 | 1 | 8.76 | 1.69 |
| A × B | 35.46 | 2 | 17.73 | 3.44* |
| Error | 651.31 | 126 | 5.17 | |
| Total | 2148.39 | 132 | | |

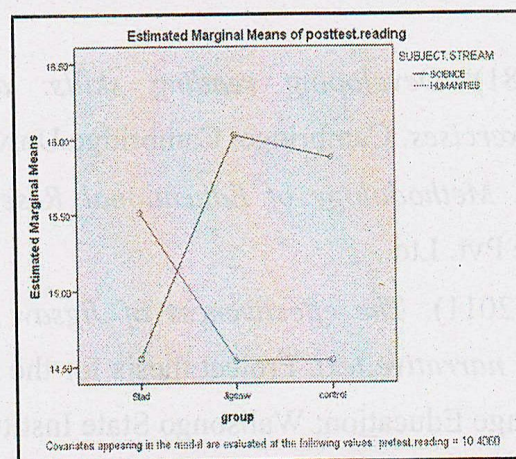
* Significant at 0.05 level

Effect of Subject Stream on Reading Proficiency

From the Table 2, it can be seen that adjusted F-Value for subject stream is 1.69, which is not significant at 0.05 levels with $df = 1/126$. It indicates that the adjusted mean scores of Reading Proficiency of students belonging to Science Group and Humanities Groups do not differ significantly when Pre-Reading Proficiency was considered as covariate. In this context, the null hypothesis, namely, "There is no significant effect of Subject Stream on Reading Proficiency of students by considering Pre-Reading Proficiency as covariate", is not rejected. It may, therefore, be concluded that Reading Proficiency was found to be independent of Subject Stream when groups were matched with respect to Pre-Reading Proficiency.

Effect of Interaction between Treatment and Subject Stream on Reading Proficiency

From the Table 2, it may be observed that the F-value of 3.44 for Interaction between Treatment and Subject Stream is significant at 0.05 level with $df = 2/126$. It indicates that the Interaction between Treatment and Subject Stream produced significant effect on Reading Proficiency of students when Pre-Reading Proficiency was taken as covariate. Thus, the null hypothesis, namely, "There is no significant effect of Interaction between Treatment and Subject Stream on Reading Proficiency of students by considering Pre-Reading Proficiency as covariate", is rejected. Graph 1 has been plotted for knowing the trend of effect of Interaction between Treatment and Subject Stream on Reading Proficiency of students by considering Pre-Reading Proficiency as covariate. From Graph 1, it can be seen that in STAD Group, Science students had significantly higher adjusted mean score of Reading Proficiency as compared to the Humanities students. On the other hand, Jigsaw II and Traditional Methods Group, Humanities students had significantly higher adjusted mean score of Reading Proficiency as compared to the Science students. In the light of these observations, it can be concluded that for teaching Reading Proficiency, STAD can be used with science students while Jigsaw II and Traditional Method may be more beneficial for Humanities students.



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Graph 1: Trend of Effect of interaction between Treatment and Subject Stream on Reading Proficiency by considering Pre- Reading Proficiency as covariate

Findings

- 1) STAD and Jigsaw II were not found to be superior to Traditional Method with respect to Reading Proficiency.
- 2) English Medium students were found to have significantly better Reading Proficiency than Vernacular Medium students.
- 3) Reading Proficiency was found to be independent of the Interaction between Treatment and Medium of Instruction.
- 4) Reading Proficiency was found to be independent of Subject Stream.
- 5) For Reading Proficiency, STAD is more beneficial for science students while Jigsaw II and Traditional Methods are more beneficial for Humanities students.

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