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Effectiveness of Bridge Programme at the Elementary Stage

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Abstract

A bridge programme was conducted in 84 schools of Delhi. An experimental study was carried out examine the effectiveness of the programme on pupil achievement in Hindi and mathematics in Classes VI, VII and VIII. A total of 1,445 students were surveyed. Three separate questionnaires for parents, teachers and principals were administered to know their perception about the utility of the bridge programme. Pre– and post–tests were conducted, and 't–value' was calculated to find out the significant difference on the academic achievement of the students. The findings reveal significant difference between the pre– and post–test scores. The results indicate a significant increase in the achievement levels of the students in both the subjects. Hence, the pedagogical interventions were found to be highly significant, in terms of contributing to pupil achievement, in both the subjects.

Introduction

The *National Policy on Education* (NEP)–1986 as revised to the *Programme of Action* (POA)–1992 emphasises the need for substantial improvement in the quality of education. The POA–1992 stresses the need to lay down the Minimum Levels of Learning (MLLs) at the primary and upper primary stages. This need emerged from the basic concern that irrespective of caste, creed, sex and region, all children must be given access to equal and quality education. Quality at the elementary education level, therefore, must address the quality of infrastructure and support services, teacher characteristics and teacher motivation, pre–service and in–service teacher education, curriculum, teaching–learning materials, classroom

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processes, pupil evaluation, monitoring and supervision. Decentralisation and community involvement in planning, monitoring and supervision ensure quality in elementary education.

However, the achievement in MLLs, particularly, at the primary stage in government or corporation run schools, still remains a distant dream for a majority of students. According to a report published by the Ministry of Human Resource Development (MHRD), Government of India, in 2013–14, out of 20.79 crore children in the age group of 6–14 years, 3.5 crore do not attend school.

Researches indicate that low levels of learning continue to persist. Over the past decade, there have been many researches on effective teaching methods. The present study was carried out to examine the effectiveness and utility of a 'bridge programme' introduced in 84 schools of Delhi, in terms of pupil achievement and perception of parents, teachers and principals.

A few teachers teaching in government schools of Delhi, presume that students coming to Class VI after passing Class V from Municipal Corporation of Delhi schools do not possess the required MLLs to cope with the content of Class VI.

Bridge Programme

The Government of NCT of Delhi, along with the State Council of Educational Research and Training (SCERT), Delhi, designed and launched a 'Bridge Programme' with the help of the Society for Equity Research and Vision in Education (SERVE) to provide quality elementary education to students of Classes VI, VII and VIII in Hindi and mathematics. The programme was conducted in 84 schools of Delhi during the summer vacation, i.e., 15 May to 28 June 2012. A total of 1,445 students were surveyed. Three separate questionnaires for parents, teachers and principals were administered to find out their perception about the utility and effectiveness of the programme. Besides, NGOs and local communities were also involved under the *Bhagidari Yojna* to bridge the gap between the school and the community. Thus, it was a partnership that connected organisations and individuals committed to equity in education.

An innovative pedagogical approach (quiz method), under the bridge programme, was used to conduct the study. Fifty sessions in Hindi and mathematics were conducted for the students of Classes VI, VII and VIII. These sessions were based on cooperative learning. Macaulay and Gazelles (1996) have characterised cooperative learning as the instructional use of small groups so that learners are able to work together in a manner that enhances both group and individual learning. Therefore, cooperative learning provides a joyful learning environment for interaction between students, enhancing their cognitive abilities.

The pedagogy is based on effective teaching approaches, in which small

teams, consisting of students with different levels of ability, use a variety of learning activities. Each team member is responsible for not only learning what is taught but also helping one's teammates learn, thus, creating an environment of achievement. This method is based on maintaining identity and dignity of the students by encouragement and appreciation.

The programme was designed on the assumption that with innovative pedagogical practices and encouragement, students can make substantial progress in basic mathematics and language skills within two months. The important strategic interventions undertaken during the programme were as follows.

- NGOs were allotted schools to conduct the programme.
- Teachers were appointed by NGOs, in consultation with SCERT, Delhi, on contract basis to conduct the programme.
- They were given 11 days' training on content development, pedagogy, use of Teaching Learning Materials (TLMs) and classroom management by the concerned District Institute of Education and Training (DIET).
- A unique 'hexagonal' seating arrangement was made in the classrooms.
- Quiz method was used as an important pedagogical intervention.
- Parents were involved in the classroom teaching–learning process. They were asked to ensure that their wards attended the school regularly.
- They were encouraged to visit the schools and interact with the teachers.
- Regular supervision and academic inputs were provided to the teachers by faculty members in the DIET and the SCERT, and heads of the concerned schools.

Objectives

- To study the effectiveness of the bridge programme in terms of pupil achievement in Hindi
- To study the effectiveness of the bridge programme in terms of pupil achievement in mathematics
- To compare the achievement levels of both boys and girls in Hindi
- To compare the achievement levels of both boys and girls in mathematics
- To study the perception of parents, teachers and principals about the efficacy of the bridge programme

Hypotheses

The hypotheses formulated are as follows.

- There is no significant difference in the achievement levels of

pupils in Hindi taught through the bridge programme.

- There is no significant difference in the achievement levels of pupils in mathematics taught through the programme.

Methodology

Experimental method of research was used to conduct the study. Pre– and post–test methods were used to find out the effectiveness of the pedagogy in teaching Hindi and mathematics. The study not only assessed the effectiveness of the programme and achievement of the students but also the perception of parents, teachers and students. Centralised standard test items were designed and administrated in all schools of North-east and Central districts of Delhi.

Sample

A total of 1,445 students (769 boys and 676 girls) were taught under the bridge programme in North-east and Central districts of Delhi. The class wise distribution of students was 466, 487 and 492 from Classes VI, VII and VIII, respectively. However, the study was conducted only on 941 students in Hindi and 906 in mathematics, as other students could not appear in both the tests. The opinions of 11 principals, 27 bridge teachers and 250 parents were sought to know their perception about the utility of the bridge programme.

Statistical Techniques

To measure the efficiency and efficacy of the bridge course, paired t–test was applied; t–test was also employed to ascertain the difference in the academic achievement levels between boys and girls.

Tools

Test papers, comprising 25 items each in Hindi and mathematics validated by SCERT, Delhi, were used. The study was conducted in three phases, i.e., collection of pre–treatment data, administration of the treatment and collection of post–treatment data.

Variable involved

The test papers were used for pre–test and post–test. Treatment levels — comprising no treatment, treatment I, i.e., training and orientation of teachers, and treatment II, i.e., actual conducting of classes — were used as independent variables. The sex of the students, schools and their localities were used as moderate variables.

Data Collection and Analysis

The pre– and post–tests were administrated under the supervision of the concerned DIET. The evaluation of the answer scripts was done by teachers of the concerned school under the guidance of DIET faculty members. Data analysis involved evaluation of the test scores for Hindi and mathematics, and computation of

mean and Standard Deviation (SD) for each of the classes and subjects. T–test was applied to find out the significant difference.

Findings and Discussion

Table 1 shows that the number of students, who attended the bridge programme, was more in North-east district than Central district. However, it was found that girls outnumbered boys in Central district.

Table 2 shows that of the 466 Class VI students, who attended the programme, 63.5 per cent were boys and 36.5 per cent girls. In Class VII, 57.2 per cent boys and 42.7 per cent girls, and in Class VIII, 39.4 per cent boys and 60.6 per cent girls participated in the course. The table further indicates that the participation rate of boys was higher than girls, except for Class VIII.

Table 3 shows the difference in the mean value and SD in Hindi. Before treatment, the mean value was 31.27, 27.58 and 29.58 for Classes VI, VII and VIII, respectively. However, it was much higher after treatment, i.e., 65.49, 63.71 and 56.45, for Classes VI, VII and VIII, respectively. Similarly, SD was much higher in the post–treatment test, i.e., 20.19, 21.26 and 23.42, as compared to the pre–treatment test, i.e., 13.28, 14.59 and 13.35 for Classes VI, VII and VIII, respectively.

Table 1: Gender and district wise distribution of students, who attended the bridge course

District	Boys	Girls	Total
North-east	470	332	802
Central	299	344	643
Total	769	676	1,445

Table 2: Gender and class wise distribution of students, who attended the bridge course

Classes	Boys	Girls	Total
VI	296	170	466
VII	279	208	487
VIII	194	298	492
Total	769	676	1,445

Table 3: Difference in the mean scores of pre– and post–test in Hindi

Classes	N	Post–test		Pre–test		t–Value
		Mean	SD	Mean	SD	
VI	283	65.49	20.19	31.27	13.28	27.19
VII	319	63.71	21.26	27.58	14.59	30.15
VIII	339	56.45	23.42	29.58	13.35	22.16

The mean value in post–test was higher than that of the pre–test. Further, to test the significance of difference between the mean values of these two tests, the t–value calculated was found to be 27.19, 30.15 and 22.16 for Classes VI, VII and VIII, respectively, which was significant at 0.5 or 1 per cent, favouring the pedagogy used. As there is substantial increase in the post–treatment achievement levels in Hindi for all three classes, it may be concluded that the pedagogy was effective for all three classes. Hence, the hypothesis that there is no significant difference in the achievement levels of pupils in Hindi taught through the bridge programme is rejected.

Table 4 shows increase in the students' achievement level in mathematics taught through the bridge course. It indicates the post–test mean value at 50.82, 50.18 and 40.15, and SD at 18.4, 17.16 and 19.26 for Classes VI, VII and VIII, respectively. The pre–test mean value was recorded at 18.86, 13.62 and 14.43, and SD at 16.09, 9.82 and 10.82 for Classes VI, VII and VIII, respectively.

The mean value after treatment was higher than that recorded in the pre–test for all classes under observation. Further, to test the significance of difference between the mean of pre– and post–test scores, the t–value calculated was found to be 20.46, 36.28 and 25.48 for Classes VI, VII and VIII, respectively, which is significant at 0.5 or 1 per cent. Hence, it was found that the course was effective in mathematics for all three classes. Therefore, the hypothesis that there is no significant difference in the achievement levels of pupils in mathematics taught through the programme is also rejected.

Perception of parents

- Almost all parents were satisfied with the course and the bridge teachers.
- They shared that their wards made a productive use of the summer vacation.
- However, some parents were not satisfied with the civic amenities and TLMs provided during the course.
- All parents shared that it should become a regular school activity and the duration of the course be increased.

Table 4: Difference in the mean scores of pre– and post–test in mathematics

Classes	N	Post–test		Pre–test		t–Value
		Mean	SD	Mean	SD	
VI	284	50.82	18.4	18.86	16.09	20.46
VII	317	52.18	17.16	13.62	9.82	36.28
VIII	305	40.15	19.26	14.43	10.82	25.48

Perception of teachers

- Most teachers perceived that the students were weak in basic mathematical concepts.
- The hexagonal seating arrangement was a problem in the classrooms.
- The training programme for bridge teachers could be of a longer duration.
- Academic supervision should preferably be done by the concerned subject faculty.
- Moreover, few teachers perceived that there was a lack of coordination among NGOs, SCERT and schools.

Perception of principals

- The course was useful for the students. However, it should be need based.
- The duration of the course could be increased.
- Bridge programme should be made a regular annual feature as it is participatory in nature.
- Arrangements should be made for the required support staff during the programme.

Conclusion

Thus, it may be concluded that the bridge course method is useful and effective at the elementary stage. The pedagogy ensures smooth and joyful learning experience by learners. Hence, learning may be made into an engaging experience. The course provides tools to structure activities that maximise learning. The study shows substantial gain in academic achievement in both Hindi and mathematics as more than 80 per cent students secured high scores in the post–test.

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