Adaptation of a Suitable Model for Peer Tutoring in Indian School Situations

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Abstract

Peer tutoring is an alternative classroom arrangement in which students take an instructional role with classmates or other students. Many models have been developed in which students work in pairs (dyads). The present research was intended to adopt a suitable model for peer-tutoring in Indian situations. The pre-test and post-test design was used and the study was conducted on a sample of 100 students from Varanasi district of Uttar Pradesh. It is evident from the analysis that Reciprocal peer-tutoring is more suitable than Class-wide and Cross-age peer tutoring models because in this model, each and every student gets a chance to become tutor and tutee. As a result, they are able to understand each others' problems regarding the learning and are able to help each other.

Introduction

There is undoubtedly no one right way to teach science to young children. Teaching is an interactive process, the foundation for which consists of the interchange of ideas, information, observations and point of views between an individual or group, called the teacher and a usually much larger group of learners. Although science education means different things to different teachers and the shift in of emphasis in the area of teaching of science has known varying shades of combination of the activities that go simultaneously.

All teachers present science in different ways. A major responsibility of science teacher is to foster opportunities for pupil-to-pupil

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discussion. UNESCO Report (1972) pointed out that "No doubt, the teacher has to import knowledge, but the more important function is to encourage thinking on the part of the students. He has to devote more time and energy to productive and creative activities; interaction; discussion; stimulation; understanding and encouragement." Hence, there is a need to identify and try out a method through which scientific attitude, logical reasoning, etc. can be enhanced. There exist various methods, viz. textbook method, lecture, project, narration, story-telling, individualised instruction, peer-tutoring, etc. A method known as peer tutoring fulfills the criteria where students get full opportunity to satisfy their individual need without hesitation because teaching is done by her or his own peer (peer is a child/student who is either classmate or older one and who acts as a tutor). It helps the students not only to interact with their mates and meet out the individual demand but also strengthen their confidence. This, free and fair atmosphere helps the individual to learn more with their classmate (Singh, 2010).

What is Peer Tutoring?

Paolitto (1976) traced the historical roots of peer-tutoring back to the first century A.D. when Quintilian noted the practice of having younger children taught by older children in his institution Qratoria.

The method was subsequently employed on a limited basis in Germany and Spain in the 16th century. Establishment of peer-tutoring on a formalised and widespread basis is generally credited to Andrew Bell, a Scotsman, who in the late 18th century established a school in Madras (presently Chennai). It was "India for orphans of British soldiers and Indian mothers". Bell modified the ancient Hindu tutoring system and, in a 1797 report, described the successful application of individual and group peer tutoring as a method of instruction and discipline.

Tutoring is basically a cognitive apprenticeship between an expert and novice. It can take place between an adult and a child or between a more skilled-child and a less skilled-child. According to Slavin (1995), peer tutoring is a component of cooperative learning. Utley and Mortweet (1997) defined peer tutoring as "a class of practices and strategies that employ peers as one-on-one teachers to provide individualised instruction, practice, repetition and clarification of concepts.

There are three models of peer tutoring – Class-wide peer tutoring (CWPT), Reciprocal peer tutoring (RPT) and Cross-age peer tutoring (CAPT). Class-wide peer tutoring was developed at the Juniper Gardens Children's project in Kansas City, Kansas (Greenwood and Delquadri, 1995). It is one model that commonly pairs competent students with students with special needs. In this method, half of the students become tutors and the remaining half as

tutees. Noting the benefits that students receive from acting as tutors, Fantuzzo and his associates developed RPT, in which, for some time, half of the students acted as tutors and the half as tutees and after some time they exchanged their roles (Fantuzzo and Heller, 1993). In CAPT, tutors are the students of higher class and the tutees are that of the lower class. Tutors are typically two years older than tutees.

Many researches have been done to check the effectiveness of peer tutoring strategy at different school levels. Brady (1997) and Mastropieri *et al.* (2006) found improved academics (*e.g.* reading, comprehension, and math computation), desirable behaviours (*e.g.* on-task, motivation) and improved social interactions or relationships such as making friends. Well-implemented peer tutoring provides the additional instruction, practice and support often needed by students with disabilities (Vaughn, Klingner and Bryant, 2001). This method allows the teacher to share her or his responsibilities with students and by doing this she/ he becomes a facilitator instead of deliverer of instruction.

Purpose of the Study

Science as an instrument of development plays a dominant role in industry, agriculture, medicine and even in our daily life. In spite of the fact that science is such an important subject, in the elementary levels it is generally seen as narrow and defective in nature. Nearly, every teacher struggles with the problem of how to best individualise instruction within the group-oriented setting of the classroom. In spite of many methods, teachers teach science in the same way their teachers did decades ago because they had acquired theories with very little practical teaching during the training. So, there is an urgent need of adapting such a teaching method through which students get more and more opportunities for interaction.

Though many researches have been done regarding the effectiveness of peer tutoring strategy but most of them are done in foreign nations. Our Indian culture and environment both are quite different from these countries. In our schools, no such facilities are available as in foreign schools. Our infrastructural facilities are quite different in comparison to their facilities. Our one class has generally more than fifty students whereas in foreign schools nearly thirty students are there in one class due to which the teacher is able to give attention to each and every student. So, before studying the effectiveness of peer tutoring, it is necessary to find a suitable model of it for our Indian context. By doing this, we can also facilitate our different organisations like, NCERT, NCTE, NEUPA, etc. to make such arrangements in textbooks, in curriculum of different subjects and teacher-training syllabus so that teachers as well as students become

aware of this teaching method and can take its maximum benefit.

Objective

To find a suitable peer tutoring model for the Indian situation. Indian situation here has been delimited to Varanasi city of Uttar Pradesh.

Null Hypothesis

There is no significant difference between the three peer tutoring models viz. CWPT, CAPT and RPT in Indian situation.

Research Design

In the present study, pre-test/post-test design is used but without a control group. All the students were divided into three groups, namely CWPT group, RPT group and CAPT group containing thirty students each. Then, all were paired randomly in tutor-tutee relationship. For conducting the experiment, first of all a pre-test was taken of all the groups. Then, they were given a three-day training on how they have to teach their peers. After it, a chapter from their science subject was chosen to do the experiment. After one week of experiment, a post-test was taken.

Sample

Total ninety students (seventy-five from Class VII and fifteen from Class IX) were selected from a CBSE affliated school situated in Varanasi city. The details about the three groups are given in Table 1.

Table 1

Number of students in different peer tutoring model groups

Sl. No.	Group	No. of students	Peer-tutoring model used
1.	1	30 (fifteen from VII and fifteen from IX class)	Cross-age PT model
2.	2	30 (all from VII class)	Class-wide PT model
3.	3	30 (all from VII class)	Reciprocal PT model

Tools

Two tests (one pre-test and one post-test) on chapter 'Water' of science were used for data collection. Both tests had thirty multiple-choice questions. Time duration of both tests was thirty minutes. The reliability of the pre-test was found to be 0.88 and that of post-test was 0.85. Content validity of the test was assured by taking the view of experts in the field of psychology, research methodology and science.

Statistical Methods

In order to know the nature of data, the measures of central tendency (mean. median, mode and S.D.) were calculated. To find the significant

difference between the groups, t-test was used.

Result and Discussion

The data obtained were analysed in terms of mean scores, S.D. and t-value. The detailed description has been given in separate tables as follows.

It is evident from the table that obtained t-value for CAPT model group is not significant at .05 level of significance because it is less than the theoretical value which is 2.04. This shows that CAPT model is not fit for Class VII students. The reason for this insignificance may be that the students of Class VII may have fear of senior students. They were unable to ask questions from senior students to clarify their confusions. They may have taken seniors as their teachers and have a respectful gap in conversation with them.

It is evident from the table that obtained t-value for CAPT model group is not significant at .05 level of significance because it is less than the theoretical value which is 2.04. This shows that CWPT model is not fit for Class VII students. The reason may be that in this model, half of the students remained tutor for the whole session and the other half remained tutees which made them active and passive learners, respectively. The tutors may have shown their dominance over tutees and the tutees may have in them the feeling of inferiority. Due to this, tutees may not have been able to ask questions to clarify their confusion regarding the chapter. The other reason may be that the tutors may not have such competence to clarify the confusions of the tutees.

It is evident from the table that obtained t-value for RPT model group is significant at .05 level of

Table 2 (a)

Mean score, S.D. and t-value for group-1 i.e. Cross-age PT model

Group	Test	N	Mean score	S.D.	t-value	Significance
CAPT Model	Pre-test	30	5.3	1.96	tcal=0.26 < t.05=2.04	Not significant at .05 level of significance
	Post-test	30	5.9	1.29		

Table 2 (b)

Mean score, S.D. and t-value for group-2 i.e. Class-wide PT model

Group	Test	N	Mean score	S.D.	t-value	Significance
CWPT Model	Pre-test	30	5.4	1.66	tcal=0.80 < t.05=2.04	Not significant at .05 level of significance
	Post-test	30	6.1	1.46		

Table 3

Mean score, S.D. and t-value for group-3 i.e. Reciprocal PT model

Group	Test	N	Mean score	S.D.	t-value	Significance
RPT Model	Pre-test	30	5.4	2.01	tcal=2.56 >t.05=2.04	Significant at .05 level of significance
	Post-test	30	6.8	1.10		

significance because it is greater than theoretical value which is 2.04. This shows that RPT model is fit for Class VII students. Its reason may be that in RPT model there is no talk of active-passive learners. In this model, each and every student gets a chance to become tutor and tutee. Due to which, they are able to understand each others' problem regarding the learning.

If we compare all the three tables, we will find that the mean score of all the groups was nearly same before the experiment. But after that, the mean scores have increased significantly. The mean score of CAPT and CWPT groups are almost the same but it has increased for RPT group.

Conclusion

The findings of the study lead to the conclusion that RPT model is more suitable for our Indian context in comparison to CAPT and CWPT models. So, we can use it more frequently in schools than the other two models.

Educational Implications

The major educational implications of the study are as under:

1. Organisations like, NCERT should make such type of curriculum and textbooks so that schools can make arrangements to use peer tutoring.
2. Organisations like, NCTE should make recommendation in teacher training syllabus so that pupil-teachers become aware of it and should be trained to use it in future.
3. Our schools should organise such type of activities so that children learn skills of tutoring one another.
4. Teachers should develop initiatives to use peer tutoring in their class. For this, our academic organisations should make arrangement for training the teachers.

Limitations

Due to paucity of time and as a pilot study, the following limitations were observed:

1. The pilot experiment was performed only in a school of Varanasi city.
2. Only Class VII students were considered.
3. Only one chapter was considered from Class VII textbook.

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