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Peer Learning in Mathematics among Primary School Children

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“Learning is the acquisition of knowledge or skill through study, experience or being taught.”

Oxford Advanced Learner’s Dictionary

Humans and animals both have the ability to learn. Children and adults learn in various social contexts by exchanging ideas and thoughts. An individual does not always construct knowledge by himself/herself, rather this construction of knowledge depends on various social interactions, in which he/she engages with peers or adults. Similar to the importance of social learning, benefits of peer interactions have also been appreciated for long. But still, it can be seen that teachers do not make use of peer learning in classrooms. It may be because they do not consider it practical enough to be used in the learning process. And, especially, if we talk about mathematics, the percentage of peer interactions and teachers’ attempt to generate such interactions remains considerably low.

But with the changing time and context, this view is also changing. The way mathematics was perceived is modifying and it is no longer considered to be an absolute or fixed body of knowledge. As per the National Curriculum Framework (NCF)–2005 vision for school mathematics, “Children should enjoy mathematics rather than fear it.” This vision of mathematics provides us with an idea of a learning environment, where a child constructs knowledge through active participation and by interacting with others. This view takes us somewhere to the concept of peer or collaborative learning. This study attempts to focus on the importance of peer learning in mathematics classroom. Here, an attempt has been made to see how it works and

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influences a child's learning—both cognitively and socially.

THEORETICAL UNDERPINNINGS

Peer learning is evolving, developing and being implemented in various ways in different areas. It is beneficial for both an individual a group. There is considerably less work done on peer learning, specifically referring to mathematics classroom.

“...Generally, ‘peers’ are other people in similar situation to each other who do not have a role in that situation as teachers are expert practitioners. They may have a considerable experience or expertise or they may have relatively little. They share the status as fellow learners and they are accepted as such...” (Boud, 2002).

“...It (peer learning) here suggests a two-way, reciprocal learning activity. Peer learning should be mutually beneficial and involve sharing of knowledge, ideas and experience between the participants. It can be described as a way of moving beyond independent to inter-dependent or mutual learning.” (Boud, 1988).

Some other works on peer learning include—cooperative learning and motivation (Abass, 2008); cooperative learning: heterogeneous v/s homogeneous grouping (Sunarti, Das and Rai, 2006); research and rational cooperative learning structures (*Kagan Online Magazine*, Winter 2001); and cooperative learning in mathematics (Lekin and Zaslavsky, 1999). Collaborative learning

enhances critical thinking (Anuradha A. Gokhale, 1995), and so on.

In a meta-analysis of 158 studies, Johnson and Johnson report that the current research findings present an evidence that cooperative learning methods are likely to produce positive achievement results. In various cases, the achievement levels are considerably higher when tasks involving peer interactions are used compared to individual ones.

SAMPLE AND METHODOLOGY

The present study focuses on the importance of peer learning in a mathematics classroom. Being empirical in nature, it is quasi-experimental, which is used to get an idea of the casual impact of various interventions in the form of tasks on the research group.

The students selected in the study were from an MCD school in GTB Nagar, New Delhi. A sample of 46 students belonging to Section B of Class III was selected. Of these, 21 were girls and 25 were boys. Keeping in mind the curiosity of the children to interact and the nature of mathematics in higher grades, which becomes more abstract, a primary section was chosen as sample.

The study took about 48 days. Various peer learning tasks were identified for mathematics class from different sources. The tasks were selected with a motive to generate the need of interaction among students and this could be successfully completed only with their participation. Also, the

tasks were based on various topics in mathematics, such as addition, subtraction, shapes, etc. The tasks involved both homogenous and heterogeneous grouping based on the nature of activity. Once the tasks were selected, they were then applied on the selected group. The interactions were carefully and regularly observed, and records of dialogues were made.

The data were then analysed in the light of development of mathematical concepts, mathematical processes, math talk and other things based on analysis interpretations, after which conclusions were drawn.

ANALYSIS AND FINDINGS

During analysis, it was seen that in collaborative tasks, peers acted as equal partners, worked in collaboration with each other and not as authority figures. They engaged in sharing of ideas, giving feedback, drawing interpretations and taking joint decisions. In various tasks executed, the learners were provided with opportunities not only to discuss and share their understanding but also engage in math talk through which they not only learnt to communicate but were also able to explain, justify, articulate, defend and reflect their mathematical thinking with confidence. The students, here, had the scope to discuss and share things, therefore, they could be seen participating in classroom activities.

Several instances could be seen where the students not only engaged in quick mental computations but also

explained to each other why and how of different things. They were engaged in explaining their reasoning, which gave rise to talks related to math. The students' ability to articulate their responses showed their clarity of concepts. An awareness of each other's reasoning and arriving at a consensus with peers helped the students to reconsider concepts, and solve the problem at hand. The students were happy that their responses were given a place in the discussion and they were motivated to take part in class. In groups, the students were seen adopting various informal strategies while discussing with their peers, which made various conceptual clarifications to the group. Also, a sense of responsibility could be seen as all students were working to help their team.

Working with the group for its benefit acted as a motivating factor for them. Also, verbalising while acting out helped other group mates to know what a child was thinking and enhance their understanding. In a single task, different students came up with different strategies, which broadened their understanding. The students could be seen discussing among themselves and reaching out at an agreement for the benefit of the group. Leaving their individual interests for the benefit of the group was their aim and in this process they were learning to accept each other's opinions. Time-to-time, they exchanged their positions and took leadership roles. The students could

be seen planning, organising or dividing the task. Hence, they worked upon their organisational and time management skills. They became happy about their contribution in the task, which helped them to build their self-esteem. The students helped each other to comprehend the problem, interact informally and provide strategies to deal with it using different forms of representation. In various instances, the students brought about their social context in the classroom, which provided various points of view. They analysed the points and used their understanding to adopt them.

They, in this process, practically strengthened various mathematical concepts and enhanced their cooperation skills. It not only helped children with similar cognitive abilities but also identified the gap in their knowledge. During these interactions, each child contributed differently and

something productive. Not everything in the conversation is always worth, sometimes off-task conversation could also be observed. Both boys and girls were engaged in cooperative tasks. It is important on the part of the teacher to listen to and communicate with the students during these tasks.

CONCLUSION

Peer learning accompanies various advantages and implications. Therefore, it is important for the teacher to be aware of those. Teachers with such a belief are likely to build knowledge communities, improve teacher-pupil talks and help improve pupil-pupil talk. It is not just important for the teacher to provide discussion time but also engage his/her pupils in purposeful talks for productive output. This does not require much effort but just some modifications in instructions and the teacher's own motivation to give something worthwhile to his/her pupils.

REFERENCES

- ABASS, F. 2008. Cooperative Learning in Motivation. *Aichi University Bulletin*, Nagoya, Japan.
- BOUD, D. 2001. *Introduction: Making the Move to Peer-learning*. In D. Boud, Cohen, Ruth and Sampson Jane (Ed.). Peer learning in higher education: Learning from and with each other. Kogan Page Ltd. London. pp. 1–17.
- . 2002. What is peer learning and why is it important? *Tomorrow's Professor*. Accessed from <http://web.stanford.edu/dept/CTL/Tomprof/posting/418.html>
- DAS, SAMSUDIN AND NOOTAN RAI. 2006. *Cooperative Learning: Heterogeneous vs. Homogenous Grouping*. CHII St. Joseph's Convent, Singapore.
- GOKHALE, ANURADHA. 1995. Collaborative learning enhances critical thinking. *Journal of Technology Education*.
- NATIONAL CURRICULUM FRAMEWORK. 2005. NCERT, New Delhi.
- ZASLAVSKY AND ROJA LEIKIN. 1999. Cooperative Learning in Mathematics. *The Mathematics Teacher*. Vol. 92. No. 3.