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# Effect of Cooperative Learning on High School Students' Mathematics Achievement and Retention using TAI and STAD Methods

**Madhu Gupta* Pooja****

**Abstract**

The study was designed to compare the effects of team assisted individualisation (TAI) and student teams-achievement division (STAD) on ninth grade students' academic achievement and retention in mathematics. 144 students were selected on the basis of multistage random sampling for this experimental study. The experimental group-1 ($E_1$) comprising 52 students were taught through TAI; experimental group-2 ($E_2$) comprising 46 students were taught through STAD, and the remaining 46 students were treated as control group (C). Achievement test in mathematics and instructional material were developed by the investigators themselves. Whole teaching - learning process was carried out for ten weeks only. Data were analysed using one way analysis of variance to compare the three groups. The findings revealed that the experimental group-1 and experimental group-2 outscored significantly the control group on post-test showing the obvious supremacy of co-operative learning over traditional method of teaching. On retention test, significant difference was found between mean retention scores of the three groups ($E_1$, $E_2$ and C).

Cooperative learning is defined as students working together to "attain group goals that cannot be obtained by working alone or competitively" (Johnson, Johnson, & Holubec, 1986). The main purpose of cooperative learning is to actively involve students in the learning process; a level of student empowerment which is not possible in a lecture format. The underlying premise is found in constructivist epistemology. It is a process which requires knowledge to be discovered by students and transformed into concepts to which the students can relate. The knowledge is then reconstructed and expanded through new learning experiences. Co-operative learning, due to its ancient pedigree and positive outcomes, has been a focus of research in the past century. Co-operative learning is indicated whenever learning goals are highly important, mastery and retention are important, a task is complex or conceptual,

* Professor, Deptt. of Education, M.D.U. , Rohtak
** Lecturer, Vaish College of Education, Rohtak