How The Collaborative Learning Can Strengthen The Teaching And Learning Process In Engineering Education

D. Praveena1,3*, E. Purushotham2,3 and J. Sunil Kumar1,3 and P. Vijaya Lakshmi4

1Department of Chemistry, SR University, Warangal-506371, Telangana, India
2Department of Physics, SR University, Warangal-506371, Telangana, India
3Department of Humanities and Sciences, S R Engineering College, Warangal-506371, Telangana, India.
4Sumathi Reddy Institute of Technology for Women, Warangal, India.

1praveenadugyala@gmail.com

Abstract: Teaching is making a difference on the lifetime of the learner, making them to be a productive member of the society. The method of teaching is completed during a well organized manner then it can improves the learners constructive, innovative thoughts, inter personal skills and provides ability to guide to future learners. Collaborative learning involves the pedagogies of learner in interactive mode and involves the cooperation, interaction between the learners. By making the discussion as group wise, by sharing their ideas openly learners present their subject. Collaborative learning enhances cooperative nature, communication skills, builds confidence about the topic and therefore the most vital thing is it provides good idea about time management. Students were participated within the activity in a good interactive way.

1. Introduction
Collaborative learning involves mainly doing activities within the class by the learners with their overall interest and participation. Here I selected the activity STAD [Student teams achievement divisions] under collaborative learning for the topic Engineering chemistry for I/I B.Tech students. It must divide the scholars into groups supported the category strength as four to five members during a Group. For instance if the category strength is 60 we'll get 12 [5 members as a group] or 15 [4 members as a group] groups.

After completing the subject within the class, on which topic we are getting to conduct the activity it’s before week we'd like to supply the topic material [soft and hard copy] and activity guidelines to the scholars. Upon the subject if any doubts are there we should always rectify within that week. Got to Follow Up the scholars regularly to attend the activity by understanding the topic. On the day of activity we should always divide them as group, should share the question paper on the screen and that we got to provide time for every question to debate about it within the group people for about two to five minutes time. They're going to understand the subject clearly and clarify the
doubts also. Such question paper display and discussion with 10 questions will take nearly 30 to 50 min time. We should always handover their discussed papers and will provide our designed activity paper, share those questions again and ask them to write down the answers within 10 or 20 min / 1 or 2 min per each question to the all 10 questions individually. They're going to answer to those questions with proper understanding because they already discussed it with their group members.

This will build confidence in them about the subject and most the learners can come to the forward to do the discussion by sharing their ideas. They won't feel shy or inferior. By experiencing such sort of activities most the learners can become free towards the subject. We'd like to offer individual grade and group grade also for the activity.

For below average and average scored learners we'd like to conduct activity again by motivating them personally.

![General steps for the activity](image)

**2. Method of Activity**

**2.1 Implementation**

I did collaborative learning within the class with the activity STAD (Student teams achievement divisions) this is first time to me doing collaborative learning within the class. My self and students were interested to try to do the activity. Before one week I announced about the STAD with the small print and gave one unit to students to prepare well for the activity. One week later I conducted the activity in my tutorial hour in seminar hall by dividing the entire class strength into 15 batches on the idea of their Hall ticket Numbers as 4 members per each batch. I divided them on the idea of their Roll numbers they don't have any option to think in differently and that they will feel that the method of dividing groups is in an authentic mode. I dictated the questions through projection also as on Black board. Later I even have given 20 minutes time for Discussion. They started discussion with
their group members and also raised doubts and asked questions. I explained and clarified their doubts alongside the above 20 min. and in another 10 min. very clearly. and that I took the papers from them on which they wrote their Discussion.(During the discussion what they wrote) Now I provided papers with the small print of Activity name, Roll no, section, Branch and the name of the scholar in word format as below.

I B.Tech 1st Semester - Mid 1

| Subject: Engineering chemistry | Activity: STAD (Student Teams Achievement Divisions) |
|-------------------------------|---------------------------------------------------|

| Name of the Student : | Hall Ticket No : |
|-----------------------|------------------|
| Branch & section :    | Marks : 10       |

I provided 20 minutes time to write down the answers individually without discussion among the group members. I collected the papers from all the members. Then I revealed right answers to those 10 questions. I corrected the papers and gave marks individually and followed by Group Grading.

2.2 Motivation
To start the activity within the class one week before I provided soft copy of the unit through mail to their group mail id. and that I provided text of the respective unit also. I made phone calls to the Irregular students and gave information about the Activity and informed them to attend regularly to the classwork. Mean while within the one week time I recalled about the topics and clarified their doubts and motivated them to read reception, ask their doubts within the next class regularly. I informed about the activity regularly through their WhatsApp group also. To the utmost extent I attempted to get rid of their fear about the topic/subject and to participate them within the activity. During the 20 minutes discussion time I roamed towards every group to see their participation. I gave my help to the scholars those that were in deadlock mode by explaining about the given questions and by providing hints. I attempted to reveal the answers from them by giving necessary guidelines. And build confidence within the m to participate in the discussion and to share their ideas whether it's going to be right or wrong answer. Told them like this is often the platform where you'll enhance your understanding skills, communication skills and mingle with group members (social behavior) during the activity. Finally to the utmost extent I achieved my goal without any absentees.

2.3 Execution
During the correction of their papers, individual marks and grades are given as below.

| No of correct answers | Secured Marks | Grade |
|-----------------------|---------------|-------|
| 10                    | 10            | A     |
| 8                     | 08            | B     |
| 6                     | 06            | C     |
| 4                     | 04            | D     |
| 2                     | 02            | E     |
| 0                     | 00            | None  |

Table 3. Group Grading
2.4 Reflection

Obtained marks for groups from lowest to highest are 24, 26, 28, 30, 32, 34, 36, 38, 40. From the above marks, the median score was 32.

| Team No. | No. of Students | Team Score (Median Score =32) | Team Performance <Median Score (Yes/No) | One most important reason for team Performance |
|----------|----------------|-------------------------------|----------------------------------------|-----------------------------------------------|
| 4        | 4              | 26 (6+8+6+6)                 | Yes                                    | Confused during the identification of Type of Reaction with lack of understanding and preparation. I told them to read at home and on next day again I explained the topics and gave some more reactions to practice to get... |

Table 4. List of the groups below median score

Recorded video link of the above activity is https://youtu.be/FXDE5rR_kOY
While writing answers they did mistake in discussion they analyzed properly. I called them to my room and explained again. Gave the other reactions to do as homework and asked to show it on next day.

The person who got 6 marks told that she didn’t prepare well. I told her take the activity as serious and participate properly for next time.

Because of their Irregularity they didn’t understand the topics. So they didn’t perform well. I gave daily one topic to read at home and ask doubts next day with me and again I explained those topics. Gave daily one assignment for practice.

3. Evaluation of the success
During the activity I gave my help to the scholars by explaining about the given questions and by providing hints. I attempted to reveal the answers from them by giving necessary guidelines. And build confidence within them to participate in the discussion and to share their ideas whether it's going to be right or wrong answer. Told them like this is often the platform where you'll enhance your understanding skills, communication skills and mingle with group members (social behavior) during the Activity. Finally to the utmost extent I achieved my goal without any absentees.

4. Conclusion
Try to prepare the learners thou roughly to practice such sort of activities, it can surely enhances their communication skills, reduce their fears about subject and other , enhances social behavior with others and every one of those can reflects on their personality. the ultimate aspect of the Teacher to ascertain the learner during a overall developed manner are often achieved.

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