

## 8. COLLABORATIVE LEARNING AND WORKING IN GROUPS

Collaborative learning is a successful approach used by students in studying any subject, especially mathematics and sciences. It has been tried and recommended in all universities around the country. It is the method practiced in Asian countries. In this method a group of 2 to 6 students get together on a regular basis, (up to eight hours a week for a four-hour course) and discuss the problems they are working on or difficulties they may have. A chalk-board and other supplies in the place of gathering is recommended. No one in the group is superior; no one is inferior. All members contribute what they know to solve the problem. Open discussion in a group helps to focus on the problem and prevents day-dreaming. It increases momentum because of the flow of ideas from the participants. It develops communication, the ability of self-expression, and confidence.

We need to know how to work in a group situation. We need to know how to accomplish a given task without conflicts or hurting others' egos. It is true that if we have a good self-image we do not get offended by others' remarks, nor do we try to find fault with others or hurt others. We need to know how to enhance productivity of the group. Sometimes a group of people can achieve a lot more in a short time than a single person. There are a few techniques that are applied in industry - first developed in Japan and now adapted in the U.S.A. These concepts are commonly grouped under the name "Quality Circles" or (QC). Quality circles are small groups of people who voluntarily meet on a regular basis to identify, analyze, and develop solutions to problems, and to implement those solutions when feasible. The QC members enter into the QC process with considerable patience. They must understand that problem solving is accomplished neither easily nor quickly. Every member should know that there may not be immediate change, so that there is no frustration

**Size of the group:** In industry, typically the size ranges from 5 to 10. In education a size of 2 to 6 students is recommended. This allows for proper interaction and sufficient opportunities for everyone in the group.

**Voluntarism:** No one is forced to join the group. Every member is respected. His/her ideas are considered and not ridiculed. There is a sense of camaraderie.

**Meetings:** The group meets regularly at least for one hour per week up to eight hours. Subgroups may be formed to solve different aspects of the task. Meetings should be always held at the scheduled time and frequent postponements must be avoided, since the members will lose interest in the group.

**Responsibilities:** Responsibilities of the group are given below:  
Compliance with QC norms. The group functions in the context of group interaction. The behavior of each member is the most crucial ingredient in the group's success. They agree upon behavior that will enhance the effectiveness of the QC.

**Accountability.** Goals established are the framework for the activities of the group. Timely feedback on how performance compares to goals can modify the group's behavior in order to bring actual performance in line with goals.

**Discipline.** Much of the success of the QC process can be attributed to the diligent execution of the QC tool skills. There is no magic at play. There is the self-imposed discipline of individual QC members of applying the tool skills of QC and using problem-solving methodology. Otherwise, the group becomes discouraged.

**Personal or extraneous problems.** If a QC departs from addressing the goal and ventures into areas beyond its immediate sphere, its success is drastically reduced and discouragement will set in, resulting in failure of the group.

**Tool Skills.** During any problem-solving process several tools are employed. They are brainstorming, cause and effect analysis, data collection, graphs. Brainstorming is a method of creative thinking. The purpose of brainstorming is to facilitate unrestrained participation in the generation of ideas by all group members. Ground rules specify that any idea is acceptable. No one offers an evaluative comment on others. The rules for brainstorming are as given below:

- Do not criticize anyone's ideas by word or gesture.
- Do not discuss any ideas during the brainstorming session except for clarification purposes.
- Do not hesitate to suggest an idea, even if it sounds unrealistic. Many times such ideas lead to a solution.
- Take turns. Only one idea should be suggested at a time by each member. Do not allow negativism.
- Do not allow the discussion to be dominated by one or two individuals. Everyone must get involved.
- Do not let the brainstorming session become a gripe session.

Brainstorming is useful during many phases of the problem-solving process and is an invaluable tool in the Quality Circles process.

**Problem-solving methodology:**

The problem-solving process is basic to QC activities and will be explained in the next section on the process of ongoing improvement.