



**CHAPTER-I**

**INTRODUCTION**

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#### 1.1. INTRODUCTION

For the achievement of human security, it is essential to uphold and respect the dignity of human beings and the same is possible, only if one understands about the human rights of every other human being. This is possible only when one is literate enough to learn, which means when he or she is educated. Education comprises not only higher and technical education but also primary education. It is only with good primary education that, one can have the edge to go in for higher education. The necessity of primary education is always there and is sure to remain. It is the backbone of the education system of any country and India is no exception. Good primary education means not only universal education but also education in its entirety which includes quality education which is value-based. The government has come up with many initiatives since the National Policy on Education (NPE) of 1986 and the Programme of Action (POA) in 1992 to promote primary education in our country. Since 1987, initiatives have been taken by the government in the nature of Operation Blackboard Scheme, Scheme of Restructuring and Reorganization of Teacher Education, Learning Without Burden, Joyful Learning, Programme for Mass Orientation of School teachers Primary Education Programme (DPEP), Special Orientation Programme for primary Teachers (SOPT), Minimum Levels of Learning (MLL), Mid-day Meal Programme, the Janashala Programme, Sarva Shiksha Abhiyan (SSA). The ASER report states that while children have access to schools and are going to schools, the negative point is that they are not learning well. Thus, this aspect needs some serious thinking. Also, for some children in our country primary education will be terminal. It is, therefore, important that it equips them fully to face the challenges of life ahead. Besides this, primary education lays the foundation of all subsequent education, i.e., secondary and university education. According to the National Curriculum Framework (NCF, 2000), at the upper primary stage children endeavour to establish an identity of their own. The process of identity formation requires taking into account one's own view as well as the views of others and of the society. Thus, the importance of peer group increases considerably. It also stresses on promoting constructivist approach in classrooms which

leads to learners having autonomy for their own learning and opportunities for peer collaboration and support.

NCF (2005) has also stressed on making group activities and discussion with peers and teachers' important components in science pedagogy. Unlike many subjects of primary curriculum, science provides the opportunity for working as a group rather than working independently within a group situation. On the basis of Tara Devi Report (1956), Report of Education Commission (1964-66) and observations of NPE (1986), Joshi (2005) has given the objectives of teaching science at upper primary level as follows:

- To provide knowledge about the basic primary facts, principles and theories related with science.
- To help students to get acquainted with the impact of science over the environment surrounding them and to develop their interest in the study of science.
- To develop scientific attitude among children.
- To cultivate the habit of systematic and logical thinking.
- To develop the habit and ability of drawing correct inferences out of the available facts and evidences.
- To provide essential base for further studies in the higher classes.
- To acquaint the students with the history of the development of science and help them to understand and appreciate the progress and development made in this sphere. But unfortunately, these objectives are not being achieved in our schools today.

According to the National Curriculum Framework (2005), science teaching at upper primary level should include group activities and discussion with peers and teachers. Thus, primary science teachers need to develop new methods of teaching keeping in mind the above points. By doing so they can provide effective science education experiences to the students and thus encourage them to find in themselves the ability to discover knowledge and develop skills which may help them to produce a better way of life for themselves, their families and their communities. Some of the innovative strategies that are being promoted in science teaching are experiential learning, blended learning, virtual learning, collaborative learning and cooperative learning.

The UNESCO (1996) states that one of the tasks of education is to teach pupils and students about human diversity and to install in them an awareness of the similarities and interdependence of all people. From early childhood, it should focus on the *discovery of other people in the first stage of education. In the second stage it should encourage involvement in common projects.* Thus, one of the essential tools for education in the twenty first century must be a suitable forum for dialogue and discussion. One such strategy promoting this aspect is cooperative learning. Cooperative learning is grounded in the belief that learning is most effective when students are actively involved in sharing ideas and work cooperatively to complete academic tasks.

## **1.2. COOPERATIVE LEARNING**

Cooperative learning involves students working together in small groups to accomplish shared goals. It is widely recognized as a teaching strategy that promotes socialization and learning among students from kindergarten through college and across different subjects. One can see that several definitions of cooperative learning have been formulated. Cooperative learning is an instruction that involves students working in teams to accomplish a common goal, under conditions that include the following five essential elements:

- 1. Positive interdependence-** team members are obliged to rely on one another to achieve the goal. If any team members fail to do their part, everyone suffers consequences.
- 2. Individual Accountability-** All students in a group are held accountable for doing their share of the work and for mastery of all of the material to be learned.
- 3. Face-to-face interaction-** Although some of the group work may be parcelled out and done individually, some must be done interactively, with group members providing one another with feedback, challenging reasoning and conclusions, and perhaps most importantly, teaching and encouraging one another.
- 4. Appropriate use of collaborative skills-** Students are encouraged and helped to develop and practice trust-building, leadership, decision-making, communication, and conflict management skills.

- 5. Group processing-** Team members set group goals, periodically assess what they are doing well as a team, and identify changes they will make to function more effectively in the future.

The Cooperative learning is not simply a synonym for students working in groups. Learning exercise only qualifies as cooperative learning to the extent that the five listed elements are present.

### **1.2.1. THE BENEFITS OF COOPERATIVE LEARNING**

- Improved academic achievement
- More active involvement in learning by students, regardless of past achievement level or individual learning needs
- Increased motivation to learn
- Increased student responsibility for their own learning
- Improved interethnic relations and acceptance of academically challenged students
- Improved time on task (sometimes dramatically improved, compared to whole class, teacher-led instruction)
- Improved collaborative skills
- Enhanced interpersonal and communication skills
- Increased self-esteem
- Increased liking for school
- Development of positive attitudes toward learning, school, peers, and self
- Development of positive social attitudes toward other group members in students with emotional and behavioural disorders
- Increased ability to appreciate and consider a variety of perspectives
- Greater opportunities for the teacher to observe and assess student learning

### **1.2.2. COOPERATIVE LEARNING TECHNIQUES**

There are very specific cooperative learning strategies teachers use to organize interactions between students. There are many such techniques that can be used in classrooms. The technique that the researcher adopted is: -

**Jigsaw:** - Developed by Aronson (1978). Groups with five students are set up. Each group member is assigned some unique material to learn and then to teach to his group members. To help in the learning process, students across the class working on the same sub-section get together to decide what is important and how to teach it. After practice in these "expert" groups the original groups reform and students teach each other. Tests or assessment follows.

Science is both a body of knowledge and a process. In school, science may sometimes seem like a collection of isolated and static facts listed in a textbook, but that's only a small part of the story. Just as importantly, science is also a process of discovery that allows us to link isolated facts into coherent and comprehensive understandings of the natural world. Science is a way of discovering what's in the universe and how those things work today, how they worked in the past, and how they are likely to work in the future. Scientists are motivated by the thrill of seeing or figuring out something that no one has before.

The general aims of science education follow directly from the six criteria of validity: cognitive, content, process, historical, environmental and ethical. To summarize, science education should enable the learner to (NCF, 2005): know the facts and principles of science and its applications, consistent with the stage of cognitive development, acquire the skills and understand the methods and processes that lead to generation and validation of scientific knowledge, develop a historical and developmental perspective of science and to enable her to view science as a social enterprise, relate to the environment (natural environment, artifacts and people), local as well as global, and appreciate the issues at the interface of science, technology and society, acquire the requisite theoretical knowledge and practical technological skills to enter the world of work, nurture the natural curiosity, aesthetic sense and creativity in science and technology, imbibe the values of honesty, integrity, cooperation, concern for life and preservation of environment, and cultivate 'scientific temper'- objectivity, critical thinking and freedom from fear and prejudice. The students must be well equipped with all the knowledge about new scientific research and technological development and for all this a deep scientific understanding is needed. Deep understanding in science goes well beyond memorization of isolated facts and concepts.

Effective science teachers use these techniques to promote deep scientific understanding (Staver, 2007)

- To determine if tasks are problems or exercises for students, ask all students if they have a good-to-excellent idea or little-to-no idea on how to do specific tasks.
- Organize cooperative student groups that reflect intellectual, gender, and cultural diversity; have members of the group share and discuss their representations of the gap and proposed solution strategies.
- Use guided-inquiry teaching strategies that lead learners to continue developing and modifying their knowledge.
- Aim problem-solving instruction slightly beyond what students can do alone but within the boundaries of what they can do with assistance from others.
- Use science concepts and processes as contexts for students to write persuasive essays, engage in oral discussions, connect data with scientific theories, and solve problems requiring mathematical reasoning.
- Design discussions and negotiations among students as on-going learning experiences.
- Provide opportunities for students to claim ownership of their learning.

### **1.3. RATIONALE OF THE STUDY**

The past twenty years have seen a tremendous increase in the use of peer directed small group work to give students opportunity to learn from each other. Among the various group strategies, cooperative learning has been cited as an effective one. Cooperative learning breaks down stereotypes and leads to an increase in self-esteem. It builds cooperative skills, such as, communication, interaction, cooperative planning, sharing of ideas, decision making, listening, taking turns and exchanging and synthesizing ideas. It is a method of promoting academic achievement that is not expensive to implement.

#### **Positive interdependence**

The students start building on each other's ideas and also listened patiently to each other before reaching conclusions in group activities. They share responsibilities for the given tasks evenly. Cooperative learning also help them to develop positive attitude about the task and work of others which cannot be seen in the traditional methods of teaching. Group work enables students to encourage and support the effort of others.

### **Face to Face Interaction**

The students very often ask their group members to explain their reasoning and statements. When there is disagreements on statements, they are reluctant to state their viewpoints and also, they never get involved in providing constructive praise and criticism. It was however seen that as cooperative learning progressed, students started listening to others without interrupting them and even voiced differences when there is disagreements. They started questioning and asking group members to explain their reasoning and also got involved in discussions. They even developed the habit of providing constructive praise and criticism towards the end.

### **Individual Accountability**

Initially the students have to be persuaded to accept their roles in groups and participate in clean up. It was also seen that if some members of the group gave ideas and suggestions others would accept it and further provide their own suggestions. Students started accepting their assigned roles responsibly and willingly participated. Each member of the group started contributing ideas and suggestions to group and showed responsibility in producing quality on relevant work. Cooperative learning helped students develop in them the sense of self accountability. They realized their duties and started performing them on their own. As a result, students started being punctual and regular.

### **Leadership Skills**

while learning through cooperative learning techniques the aspects of leadership quality of students started undergoing change and they portrayed leadership skills as was desired. Along with performing their assigned roles they also helped their group members to do so and even started involving, valuing and recognizing the contributions of their group members. During group activities they started managing time effectively by maintaining focus on the topics of discussion.

### **Communication Skills**

Cooperative learning helps the students to start developing appropriate communication skills. They actively listen to all members and interact and discuss with all group members without any bias. This is very appreciable and positive skill as in the global era. Team work skills and social interaction skills are most in demand and for good communication skills.



## **Decision Making**

The students direct their group in reaching consensus. They defend and rethink ideas relating to their group's goals and start communicating all ideas into a single position thereby showing improved signs of decision making.

Even if National Curriculum Framework (2005) has stressed on group activities and discussion with peers and teachers to be made important components in science pedagogy, cooperative learning has still not become a common instructional technique in science in our country. It states that cooperative learning is an effective strategy for science teaching and should be used in classes by teachers. It further goes on to point out the advantages of using cooperative learning viz.

- It makes teaching-learning process learner centred,
- Each child gets individual attention,
- It enhances creative thinking, problem solving abilities, reasoning power and communication skills,
- It helps the weak as well as bright students equally and
- Finally, it helps them to respect and accept other people and their views too.

So, as an education community committed to the success of our students, it is our duty to work out on these areas and come up with possible solutions to help them.

## **1.4. STATEMENT OF THE PROBLEM**

The study is titled as “Effectiveness of Co-Operative Learning on Academic Achievement in Science of Class-VII of Keonjhar District, Odisha”.

## **1.5. OBJECTIVES OF THE STUDY**

1. To study the effectiveness of co-operative learning on academic achievement in science of class VII students.
2. To study the effectiveness of co-operative learning on academic achievement in science of class VII on the basis of gender.

## **1.6. HYPOTHESES OF THE STUDY**

**H<sub>0</sub>1.** There is no significant difference in the academic achievement in science of class-VII students.

**H<sub>0</sub>2.** There is no significant difference in the academic achievement in science of class-VII students on the basis of gender.

## **1.7. OPERATIONAL DEFINITION**

**Effectiveness-** In this study effectiveness may be defined as enhancement of learning through cooperative learning strategy

**Constructivist Method-** Constructivist Method in teaching learning is related to the child centred learning.

- Prior Knowledge impacts the learning process.
- Initial understanding.
- Building useful knowledge structures.

**Science Achievement-** Achievement in the present study indicates that students should understand and enhance their achievement in chapter selected by the investigator i.e., 'Nutrition in Plants' of class VII science.

**Cooperative learning-** Cooperative learning involves students working together in small groups to accomplish shared goals. It is widely recognized as a teaching strategy that promotes socialization and learning among students from kindergarten through college and across different subjects. One can see that several definitions of cooperative learning have been formulated. Cooperative learning is an instruction that involves students working in teams to accomplish a common goal.

## **1.8. DELIMITATIONS OF THE STUDY**

The study was delimited to:

- 1) Only one English medium Upper Primary School from Champua, Keonjhar, Odisha.
- 2) Class-VII Science (CBSE)
- 3) Only chapter selected is 'Nutrition in Plants'
- 4) Population is restricted to two sections only- 48 students.