Cooperative Learning: Theory & Practice

A New Guide for Teachers

SCHOOLS FOR LIFE PROGRAM

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Preface

This manual consists of two parts. **Part One** is a self-study document, which contains an overview of cooperative learning strategies, theories, and practice and should be used during the training as well as for future reference. **Part Two** consists of a number of training modules most of which can be used independently of each other, depending on local needs. This manual also includes a DVD that provides useful exemplars of Cooperative Learning at a number of different grade levels (i.e., Grades 2, 5, and 8) and with different subject matter. Interestingly, the DVD includes examples of Cooperative Learning applications at lower secondary school level, though there is a common misconception that this methodology should only be used at primary level. One of the modules provided in this manual provides some structured activities to use when showing the DVD, so that it can be used most effectively. Nevertheless, teachers and student-teachers will still gain a great deal of knowledge about Cooperative Learning simply from watching this DVD, even if the time for discussion and training is limited.

While Co-operative Learning is usually understood to take in a wide array of learning techniques, which stress increased opportunities for critical thinking and creative learning, these training materials focus primarily on a somewhat lower set of expectations for teachers. Given the many difficulties found in village schools (e.g., large class sizes, poor facilities, under qualified teachers, etc.), the authors have stressed strategic interventions in the classroom, which are cooperative in nature and which will enable students to spend more time on task than is possible with more traditional teaching techniques. Because student achievement is usually correlated with time on task, it is hoped that interventions of this nature will facilitate reductions in student repetition rates, improved learning, more child friendly learning environments, as well as instil values of team work and helping behavior in young children.

Acknowledgement

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PART 1: SELF-STUDY DOCUMENT
Cooperative Learning Manual

SCHOOLS FOR LIFE

CHAPTERS

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CHAPTER 1

WHAT IS COOPERATIVE LEARNING?

Teaching practices that provide opportunities to students to learn together in small groups are known as *Cooperative Learning.* Cooperative Learning is children learning together in groups, which are <u>structured</u> so that group members have to cooperate to succeed. Students work together to learn and are responsible for their team-mates' learning as well as their own. Today, many teachers in Cambodia are reconsidering traditional practices that emphasized competition over cooperation in the classroom. Teachers are rethinking whether it makes sense to encourage students to work by themselves, often hiding what they know from other students in order to prevent cheating. They are discovering that cooperative learning allows more students to be actively engaged in learning.

Classrooms are very social places but often when teachers think about learning the focus is on individual learning and the social aspects are often viewed as a distraction and/or a nuisance. If, however teachers are able to make positive use of this social aspect and the social arrangement of the classroom then more learning would take place. Cooperative Learning improves students' communication skills and enhances their ability to be successful in the world of work and to live in the society.

Effective cooperative learning is dependent on the sort of talk, which takes place in the group between students. Talking about a question helps create meaning and understanding; humans make meaning about things through talk. Studies have shown that by having to explain answers to problems to a peer that the act of having to clarify and communicate actually enhances the students understanding. In these conversations it is the process of discussion that is important not whether the answers are right or wrong.

According to Vygotsky: new knowledge and ideas develop in a context of discussion, and they appear first 'out there' in the extra-mental plane.

During cooperative learning activities, each member of a team is responsible not only for learning what is taught but also for helping team-mates learn, thus creating an atmosphere of achievement. Students work through the assignment until all group members successfully understand and complete it. In cooperative learning students will:

- *Gain from each other's efforts.*
- *Your success benefits me and my success benefits you.*
- *Understand that all group members share in the outcome.*
- *We all sink or swim together.*
- *Know that how well you do is the result of both individual and team performance.*
- *We cannot do it without you.*

- *Feel proud and jointly celebrate when a group member is recognized for achievement.*
- We all congratulate you on your accomplishment!

CHAPTER 2

THE PURPOSE OF COOPERATIVE LEARNING

2.1 Four Reasons Why Cooperative Learning Is Recommended

The best place to start in trying to use Co-operative Learning effectively is to first understand the purposes of such a methodology. There are basically four main reasons why Cooperative Learning is to be recommended:

1. More children actively learning

Co-operative Learning helps to actively engage more children in learning than do teacher-centred or lecture-oriented methodologies. In using the latter, it is usually only possible to actively engage at most one or two students in active learning at the same time. By using more cooperative methodologies in which students work together in groups, all students are actively engaged on a learning task. Students become more active participants in their own learning, as opposed to passive recipients of knowledge who only listen, observe and take notes.

2. Children learn to help one another

Co-operative Learning encourages students to support their classmates in a group rather than to compete against one another. In this way, students can combine their talents and help one another.

3. Child-to-child learning support

Co-operative Learning provides the opportunity for higher-achieving students to help students who are slower learners. These higher achieving students can probably communicate more easily with their peers than can the teacher. The help of these students also increases the amount of explanation that occurs in the classroom overall.

4. Improved motivation through success

Co-operative Learning helps to improve the motivation of many students by offering the opportunity to more students to experience the joy of winning (in the case of cooperative activities that require games) and academic success. In classrooms where students are only allowed to compete individually, only the few high achieving students will likely have this experience. In classrooms where the students are divided into cooperative teams, each with its high- and low-achieving students, the opportunity to succeed is more evenly distributed.

2.2 What Research has Found about Cooperative Learning

Applications of social learning to the classroom first began in the early 1970s. Since that time, what we now know as 'Cooperative Learning' has been one of the most researched kinds of instructional methodology used in the classroom. Much of this research has concluded that cooperative learning strategies in the classroom have been highly successful, both in terms of **learning achievement** as well as the development **morals and values.** International research

(Johnson &Johnson, date) has found that Cooperative Learning improves not only **learning** but also **social development skills** and **communication.**

See some of the advantages that researchers have found when studying Cooperative Learning.

ADVANTAGES OF USING COOPERATIVE LEARNING

LEARNING

- increased academic learning
- increased critical thinking ability
- more time spent on learning tasks (less day dreaming)
- increased student retention
- increased student motivation to learn
- enhanced student satisfaction with their learning experience

SOCIAL DEVELOPMENT

- reduces disruptive behaviour
- develops peer relationships
- promote student self-esteem
- students use appropriate social skills
- improved attitude towards school

COMMUNICATION

- students learn to share information
- helps students to consider other people's point of view
- helps students develop skills in oral communication

CHAPTER 3

ELEMENTS OF COOPERATIVE LEARNING

It is only if the main elements of cooperative learning take place in the lesson that efforts may be expected to be more productive than competitive and individualistic efforts. The main elements of Cooperative Learning are:

1. Positive Interdependence

2. Collaborative (social) Skills

3. Processing group interaction

4. Heterogeneous Grouping (mixing students)

5. Individual Accountability

"Cooperative learning is a structured form of small group learning. It is based on two key assumptions, positive interdependence and individual accountability" (Cottell & Millis, 1994).

3.1. Positive Interdependence

Students perceive that they need each other in order to complete the group's task. The key to doing this successfully is to structure the group so that group members clearly get the message that " I can only succeed and do well if the other members in my group also succeed and do well".

3.1.1 Teachers may promote positive interdependence by:
- Establishing mutual goals (learn and make sure that other group members learn),
- Using joint rewards (if all group members achieve above the criteria, each will receive bonus points),
- Providing resources that have to be shared,
- Assigning roles to individuals,
- Strengthening a feeling of "shared identity" (by asking groups to name their group).
- Each group member's efforts are required and indispensable for group success
- Each group member has a unique contribution to make to the joint effort because of his or her resources and/or role and task responsibilities

3.1.2 Establishing group roles
Group roles will vary depending on the nature of the task. Some possibilities are:
- Facilitator – leads the discussion and encourages everybody to participate,
- Scribe – takes notes on the group's discussions,
- Time keeper – makes sure the group completes the task in the time set by the teacher
- Reporter – shares the group's ideas with the rest of the class using the scribe's notes
- Illustrator – draws pictures or diagrams needed

- Messenger/collector – relays information with teacher of other groups, and gathers or returns materials.

3.2 Collaborative (Social) Skills

The required social skills to make cooperative learning activities successful may not happen naturally. Teachers need to organise lessons so that there are opportunities for the following skills to be developed;
- praising each other, promoting each other's success
- listening,
- showing patience,
- keeping each other on task
- Orally explaining how to solve problems
- Teaching one's knowledge to other
- Checking for understanding
- Discussing concepts being learned
- Connecting present with past learning

3.3 Processing Group Interaction

In order to improve cooperative learning activities teachers should encourage;
- children to reflect on how well they are working together
- group members to discuss how well they are achieving their goals and maintaining effective working relationships
- group members to describe what actions are helpful and not helpful
- children to make decisions about what behaviours within the group to continue or change

When older students have become familiar with cooperative learning activities, then the teacher can encourage additional social skills such as:

- *Leadership*
- *Decision-making*
- *Trust-building*
- *Communication*
- *Conflict-management skills*

3.4 Heterogeneous Grouping (mixing students)

Groups should not remain the same for all activities. Changing the make-up of the group will create increased social skills by placing students in a dynamic environment where they meet new friends and new situations. Groups can be arranged in a number of ways both randomly or using the following factors in their construction:
- past achievement levels
- diligence levels
- sex
- age
- religion
- ethnicity

3.5 Individual Accountability

One of the most commonly heard objections to having students work in groups is that some group members will end up doing all the work and the learning, while others will sit ideally by or be disruptive. This can occur because some students try to avoid working or because others want to do everything. Activities to promote individual accountability and to keep all children involved include:

- each student individually takes a quiz, completes a task, or writes an essay when the material is studied.
- group members are called on at random to answer a question
- Each group member has a designated role to perform. These roles can rotate.
- Each member has different responsibilities for completing different parts of a group project. For example, if the group need to make a presentation on Phnom Penh, one member would write about the history, one member about the geography, one member about the economy, one member about important buildings and landmarks.

In Cooperative Learning, children must still do some work as individuals
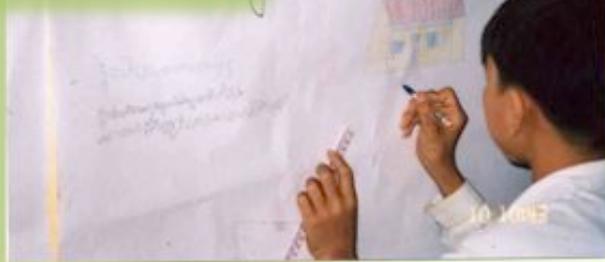
CHAPTER 4

HOW COOPERATIVE LEARNING IS USED IN THE CLASSROOM

The following pointers should help the teacher to organize Cooperative Learning activities in the classroom in a way which will contribute to the overall learning environment.

Cooperative learning is group work.
But group work is not necessarily cooperative learning

4.1 Organising Groups

- Be sure that the objectives and methods of working together in a group are clear.

- Do not simply put students together in a group and tell them to "work together."

- Be clear about what is expected from students and how they should organize themselves.

- Be sure that there is a clear **division of labour** in each group. Each student should know clearly what it is that they have to do.

A specific division of labour in each group is a measure through which to keep all group members engaged in the activity.

- Try to mix students of different abilities into one group.

- Keep group sizes under eight children. Five to six students in a group is best.

- Move back and forth between large group presentations and small group work several times during the lesson (Stages 3 and 4 in the MoEYS Lesson Plan Format). Teaching in this way will help to maximize the number of students on task at the same time.

- Try to create a feeling of group pride in each student. Such feelings will help to strengthen cooperation in the group and help students to work together better. A feeling of group pride may be achieved by trying to keep the membership of groups stable and/or by allowing students to choose a name for their group such as "Blue Group" or "Lion Group".

- Make sure that students are held accountable for their own learning. *Cooperative Learning does not mean that your friends do your work for you.* Students must understand that they will still be tested and graded on their own individual performance at the end of the lesson, the month, or

the year.

4.2 The Teacher's Role in Co-operative Learning

The teacher plays a crucial role in orchestrating and overseeing that group activities occur as planned. In most cases, the teacher must be sure to establish him or herself as a firm figure in the classroom but not so firm as to dominate the students. There are also some key duties that the teacher must be responsible for. Consider some of the important responsibilities outlined below:

KEY ROLES OF THE TEACHER IN COOPERATIVE LEARNING
▪ Specify academic objectives
▪ Specify collaborative skills
▪ Decide on group size
▪ Assign students to groups
▪ Arrange the room
▪ Plan materials
▪ Assign roles (reader, recorder, calculator, checker, reporter, materials handler etc.)
▪ Explain the task (explain procedures, give examples, asks questions to check task is understood by all)
▪ Test and question individual children (to promote individual accountability)
▪ Promote inter group co-operation (have groups check with each other and help each other)
▪ Monitor students' behaviour (while students are working, circulate to see whether they understand the assignment and the material, give immediate feedback)
▪ Praise good use of group skills
▪ Provide assistance on understanding a task
▪ Provide assistance on how the group can work together more effectively
▪ Ask children to reflect on how well they are working together as a group ("process group functioning") by asking children to summarize.

CHAPTER 5

## CLASSROOM ARRANGEMENTS THAT HELP WITH COOPERATIVE LEARNING

It is very important for teachers to realize the influence of furniture arrangement on the way in which they teach and the manner in which students learns. Indeed, the dictum that "furniture arrangements drive methodology" is a basic element in our understanding of pedagogy. When student desks are arranged in rows all facing the front of the classroom, this will direct our methodology towards a highly teacher-centered instructional approach. Students are oriented towards the teacher and not to other students.

In implementing a cooperative learning strategy in instruction, it is, therefore, important that students be oriented towards themselves (i.e. for group work) with the teacher in a monitoring role. For this purpose, the furniture arrangement suggested in the diagram is highly recommended. Where possible, short desks should be used in groupings of three with all students oriented to the center of their group. Where short desks are not available, long desks may also be used effectively.

"from sage on the stage to guide at the side" King, Alison (1993)

In the grouping arrangements shown in the diagram, students can easily work together in activities organized by the teacher (or even themselves). The teacher should note that the central area of the classroom is kept free and open to facilitate monitoring and/or demonstrations to groups. Indeed, for purposes of monitoring, such an arrangement is vastly superior to placement of desks in rows. It should also be noted that desks are still oriented in such a way so that is possible for students to
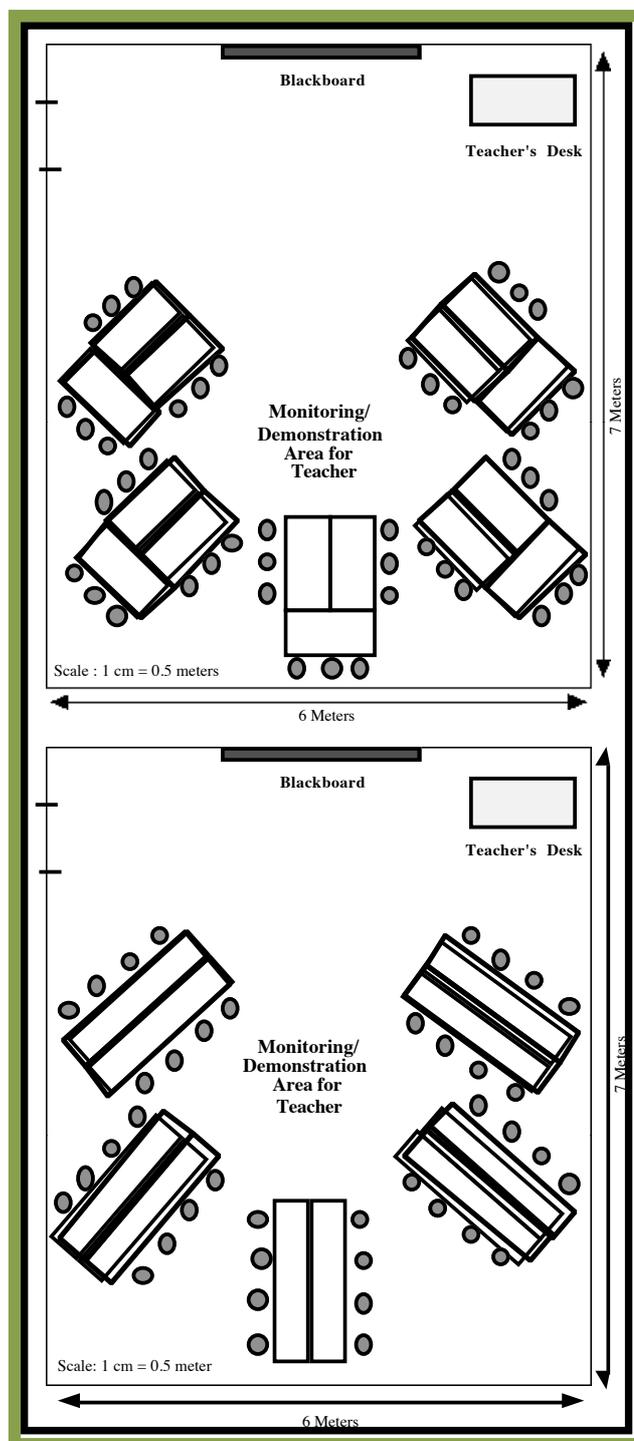
Some suggested desk plans in Cambodian classrooms

see the blackboard without having to turn their heads more than 90 degrees from the direction in which they are pointing. This arrangement can work effectively so long as the teacher limits lecture-like presentations to not more than 10 minutes. Group work should take up the vast majority of time in the Co-operative Learning classroom.

CHAPTER 6

CLASSROOM APPLICATIONS OF COOPERATIVE LEARNING

In the following examples at different grade levels, a typical classroom task will be described using traditional methods. Then, it will be revised to describe how the subject could be taught using cooperative group strategies.

6.1 First Grade Applications

A major part of the Grade 1 curriculum is learning to recognize letters and the sounds that letters make. In a traditional classroom, the day may begin with a large group meeting in which the teacher explains to students about the shape and sound of the letters ñ and ñ. The teacher may then call on some students to come up to the board to identify words that start with these letters.

Because Grade 1 classes emphasize socialization as an important learning experience, it is natural to introduce children to co-operative groups at this early age. The lesson on the letter sounds described above can easily be adapted to a Co-operative Learning methodology. After teaching the shape and sound of the letters, instead of making students come up to the board to practice, teachers can have students work at their desks in groups in a way which reinforces learning and which students enjoy. The teacher can take some cut pieces of paper and ask students to put the pieces together in a way that forms the letters ñ and ñ. Afterwards, students are told that they must sort some pictures of animals and other objects, which the teacher provides to each group and put them around the letters formed. In this activity, the teacher makes sure that students know what they have to do. Some students make the letters; others sort through the pictures and group them by the letter sound. One or more other students put the pictures around the letter. The final product for the letter ñ may, therefore, look something like this:

Example: Things starting with the letter Ñ

6.2 Second Grade Applications

In the second grade, students are starting to study words in greater depth. They must be able to express the meaning of words using definitions which consist of more than one word (as in Grade 1), know its part of speech, and perhaps use these words in an original sentence. A typical word study lesson may find a teacher asking students to recite the definition of words from a lesson and to indicate whether it is a verb, a noun, or an adjective.

Because learning at the lower primary level emphasizes socialization as an important learning experience, it is natural to introduce children to cooperative groups at this early age.

A teacher using cooperative learning techniques, on the other hand, might develop a group activity which is much more engaging and which helps students gain a much better grasp of word meanings through actual usage. Using several sheets of paper cut into small squares, the teacher may make five identical sets of 15 or 20 words which students have studied from the past several lessons. After having reviewed the various word lists with students, he then distributes the word sets to each of the groups, which have been organized in the classroom. Each group is told to sort the words into 4 categories:

When the groups have finished identifying the words, someone in the group should write them down on paper for future reference. While this is being done, the remaining students arrange the words into as many sentences as

Sorting Words
*Words that are nouns
*Words that are verbs
*Words that are adjectives
*Words that do not fall into any of the above categories

they can. As they are doing this, the teacher walks around the classroom monitoring student progress. Once again we can see the importance of a specific division of labour in each group as a measure through which to keep all group members engaged in the activity. Someone is in charge of finding verbs, another of nouns, and so forth. Similarly, one student writes the word classes down on paper as others form sentences.

When used wisely, competitions between groups (as opposed to individuals) can help strengthen student engagement in an activity as well as to increase the solidarity among group members. In the word study example given above, for instance, the teacher might tell students to arrange words into sentences as a competition. The group that is able to make the most sentences from the words given wins.

6.3 Third Grade Applications

By the time that they enter the third grade, students are beginning to read with much greater proficiency. Reading quickly with minimal diminution in comprehension, therefore, assumes a place of greater importance in the curriculum. However, when teachers teach reading to a large group as they are usually accustomed, they are particularly handicapped in monitoring the reading speed of many students simultaneously. Typically, the teacher asks a student to read from the text for a short period while the others supposedly follow along silently. Then the teacher moves onto another student to start reading from where the previous student left off. At most, the teacher may provide active practice to 10 or 12 students in a classroom in a 40 minute period. The other two thirds of the class may or may not have been engaged in the reading lesson. And certainly one can hardly blame the students if they are not engaged. Aside from being incredibly boring, reading in this manner seems entirely without purpose except to torture the student.

There are many opportunities in Co-operative Learning to engage students in purposeful reading experiences that emphasize both reading speed as well as comprehension.

A different approach to reading using Cooperative Learning techniques could be for example, co-operative group exercises involving the reading of newspapers. Newspapers are an extremely useful strategy through which to actively engage students in reading. Students are now encountering newspapers with increasing frequency and seem to be greatly intrigued by them, much more so than they are with reading the textbook.

As a co-operative reading exercise, a teacher might distribute the same newspaper issue to five or six groups in the classroom. Each group receives one complete newspaper with perhaps four or five sheets in it. The teacher then gives a short summary of an article, an advertisement, or even a cartoon to the class and asks each group to find the article. In doing this activity, each student might take a page of the newspaper and scan for the article that the teacher has described. If the group size is quite large, two students might take a single page since newspaper pages are usually quite large. When a group has found the article, they should all raise their hands. If the teacher has organized this activity as a competition, the teacher might give the first group that finds the article a point. This procedure is then repeated for additional articles.

The above activity helps to facilitate practice in speed reading as well as comprehension by providing a purpose to the reading exercise. Because the reading material is highly relevant (unlike reading a textbook), students are naturally engaged. In addition, the competitive nature of the task provides the desired emphasis on reading speed as well as understanding of what is read. Each person i.e. individually in the group is skimming the

newspaper looking for the article to help his or her team score a point. The group spirit of the activity is, therefore, once again important in facilitating high student engagement. And, of course, all students in a group regardless of ability level will experience the thrill of succeeding when the desired newspaper article is found.

6.4 Fourth Grade Applications

History and Geography are two subjects, which sadly have been thought to encompass only factual recall of places, dates, and names. Instruction of these two subjects in many Cambodian classrooms emphasize only textbook reading (or blackboard reading if students do not have textbooks) followed by some questions which the teacher directs to the class as a whole. Once again, only one or two students can be actively engaged in the lesson at the same time. Imagine how boring such a lesson must be. No wonder so many students want to drop out of school before getting to Grade 5.

Co-operative Learning strategies can help to increase student participation and interest in History and Geography Lessons while also bringing learning to a level higher than just rote recall of information. Having students construct charts and diagrams, for example, might be one way of keeping everyone in the class actively involved in a lesson on People's Way of Life. In such a lesson, the teacher would organize about five groups in the classroom and ask each group to make a table, which summarizes how the people live differently in some of the places that students have studied (e.g., villages, cities, etc.). The categories in the table may be developed by the teacher, or alternatively, if the students seem able, this may be left to the students themselves to determine. Some crayons and one sheet of poster paper are distributed to each group for them to make their table. In order to keep everyone involved in the activity, the teacher might suggest that one or two students each take responsibility for researching the information on one group of people to get the information required to fill in the table. When all the information has been gathered, the students discuss it and fill in the table accordingly (see chart below.)

A Fourth Grade Cooperative Learning Project on Social Groups

How People Live in Different Places			
Group	**Where do People Live**	**Materials People Use**	**Main Occupations**
Village	Countryside	Traditional	Farmer
Hill Tribe	Mountains	Traditional	Herder/Gatherer/Farmer
Coastal Villages	Seaside/Riverside	Traditional	Fisherman
City	Towns	Modern	Factory Workers, Office Workers

Constructing charts and diagrams of the sort described above is a learning task which requires comparisons and contrasts of the information studied in the lesson. When the students do such tasks, they are engaging not in rote recall of information but in analysis of the relationships between social groups. Such tasks, therefore, in addition to keeping everyone actively engaged in the lesson also help to bring the lesson to a much higher level of understanding.

Cooperative Learning can facilitate the learning of higher order thinking skills such as classification and ordering

6.5 Fifth Grade Applications

In most Cambodian classrooms today, science teaching is centred on textbook reading, some question and answer activities, which emphasize rote recall and an occasional demonstration by the teacher. But more recently, the science curriculum is being revised to include more student participation in the learning of science concepts. Co-operative Learning, of course, is a methodology which is ably suited to facilitating this kind of student participation in the learning of science.

New participatory techniques in the instruction of science emphasize such skills as observing, recording, classifying, measuring, and hypothesizing. Each of these skills can be matched very well with the division of labour that might be established in a classroom study group. For example, in a lesson on rocks, teachers might ask each student to bring two or three rocks with them from home. In groups, students might be asked to develop systems of classification based on the characteristics of the rocks which have been assembled. One or two persons in the group might start making a classification system based on texture, colour, and hardness. Two other students actually arrange the rocks based on this system. Another student records how the rocks are classified by drawing the classification system on a large sheet of paper.
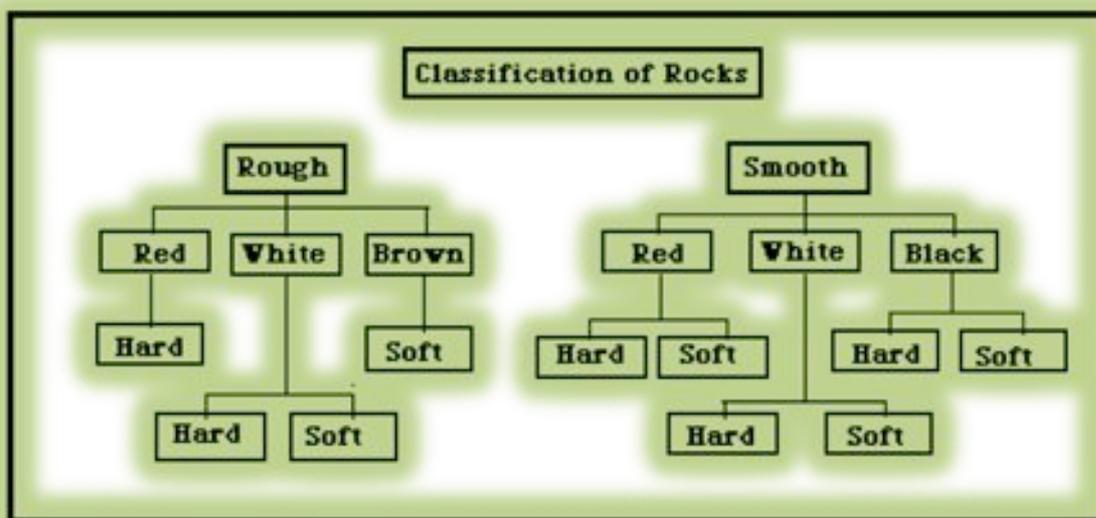
There are many other similar kinds of group science activities that can be organized in this way. For example, in groups, students can make graphs summarizing the ages of students in the classroom or where they come from as another recording/classifying exercise. Or alternatively, students can do simple investigatory experiments in groups such as placing objects in a can of water to see whether they sink or float. All the students in the group should record what is observed and discuss what conclusions can be made about the density of each object. Students would conclude that those objects which float (e.g., a leaf, the plastic cap of a pen) have low density while those that sink (e.g., a rock, a paper clip) have higher density. Once again, a clear division of labour should be set up in each group: one student might be responsible for collecting the objects, another for placing the objects in the water, another for writing down the results, and so forth.

Co-operative Learning is a methodology, which is ably suited to facilitating student participation in the learning of science

CHAPTER 7

CONCLUSION

During the last 10 years, many studies have been done to assess the effectiveness of Co-operative Learning Methodologies. Almost all of these studies have validated the belief that such methodologies are much more effective in bringing about higher achievement among students than are traditional competitive strategies. Perhaps even more importantly, these studies have found that cooperative learning strategies greatly enhance the motivation of low and middle achieving students. It is also commonly understood that Cooperative Learning strategies not only improve learning achievement but are also very effective in fostering social development and instilling values of cooperation and helping behavior. Thus, this methodology is not only a helpful tool for **cognitive development** but also for **affective competencies** as well.

Many teachers in Cambodia tend to prefer classroom activities, which stress competition among individual students as the chief means through which to motivate them. While these methods may be effective with a small handful of bright students, they often have a devastating effect on the majority of students who are not fast learners. The public nature of competitive rewards and incentives leads to embarrassment and anxiety for children who fail to succeed. When the anxiety and embarrassment are too great, children who know that they are not likely to win no matter how hard they try, eventually drop out of active learning. If teachers are really trying to help all the students in a classroom learn sufficient literacy and numeracy skills, this observation should be of great concern to them.

Co-operative Learning strategies greatly enhance the motivation of low and middle achieving students.

The competition between groups, which is stressed by Cooperative Learning has motivational advantages for low and middle achieving students that individual competition does not. By grouping students of different abilities into one team as is recommended in Co-operative Learning, the joy of success can be more evenly distributed to a greater number of students in the classroom.

PART 2: TRAINING ACTIVITIES
Cooperative Learning: Theory & Practice

SCHOOLS FOR LIFE

ACTIVITIES & HANDOUTS

1. INTRODUCING A TECHNIQUE OF COOPERATIVE LEARNING
2. IDENTIFYING THE PROBLEM
3. KEY TENETS OF COOPERATIVE LEARNING
4. COOPERATIVE LERNING TECHNIQUES IN PRACTICE
5. COOPERATIVE LEARNING IN LESSON PLANNING
6. OTHER COOPERATIVE LEARNING TECHNIQUES – THINK, PAIR, SHARE
7. COMMON PROBLEMS WHEN USING COOPERATIVE LEARNING

TRAINING ACTIVITY ONE

Introducing a technique of Cooperative Learning by practising How to make Rules for the Classroom (30 Minutes)

This activity should be used with participants to begin the workshop on Cooperative Learning as an introduction to some of the techniques. The facilitator should explain that he/she is going to demonstrate a Cooperative Learning approach in the way the ground rules for the workshop are decided. We need rules both for the workshop and the classroom and they should be rules that everybody agrees are important. The following is one way of deciding on those rules;

How to make Rules for the workshop

1. Discuss the need for Rules
Have participants pair with a partner to discuss this question: "Why do we need rules in the classroom?" then feed back to the large group.

2. List the Rules
Organise the participants into groups. Groups could be based on which School, District, role etc. that the participants come from or a deliberate mix. The facilitator should decide in advance
Give each group a large piece of paper which is passed around the group and everybody writes on the paper a workshop rule that they think is important. (Encourage them to make the rules "positive" - so not starting with the word "don't")

3. Select the Best Rules
A Reader on each team reads the list of rules back to the group. In group discussion participants select their top 3 rules and clarify the wording of those rules.

4. Compile Workshop List of Rules
Designate a Reporter on each team. Let each team contribute their best rules to a workshop list. Write each new rule suggested on the board as the Reporter reads it.

5. Vote for the Top Six Class Rules
Get the participants to vote for the best six rules.

6. Post the Rules
Write the final rules on a poster and display in a good position through out the workshop

The facilitator should end this session by explaining that the same process could be used in the classroom and students could make a colourful poster of the classroom rules. Distribute Handout A.

HANDOUT A

How to make Rules for your classroom

1. Discuss the need for Rules

Have students pair with a partner to discuss this question: "Why do we need rules in the classroom?"

2. List Rules

Organise the class into groups.

Give each group a large piece of paper which is passed around the group and everybody writes on the paper a classroom rule that they think is important. (Encourage them to make the rules "positive" - so not starting with the word "don't")

3. Select Best Rules

Designate a Reader on each team to read the list of rules back to the group. In group discussion have students work to select their top 3 rules and clarify the wording of those rules.

4. Compile Class List of Rules

Designate a Reporter on each team. Let each team contribute their best rules to a class list. Write each new rule suggested on the board as the Reporter reads it.

5. Vote for Top Six Class Rules

Get the students to vote for the best six rules.

6. Post Rules

Create a class wall display of the rules.

TRAINING ACTIVITY TWO

Identifying the Problem in the Classroom (1 Hour)

1. Objectives
▪ Participants reflect on common classroom practices and the negative psychological dynamics that often occur with more traditional teaching styles.
▪ Participants begin to understand the need for more varied teaching techniques.

2. Procedure
• The facilitator should begin the session by trying to evaluate the effectiveness of current methods of teaching focusing especially on individualistic, competitive aspects of such learning. This should establish set for the reading of the case study.

• The facilitator passes out the handout entitled, *Case Study and Discussion Questions* to each participant (see **Handout B**).

• After reading the case study to participants, the facilitator has them answer the questions at the bottom of the handout in small groups. Poster paper and marker pens should be distributed so that discussions can be recorded and reported.

• The facilitator elicits group responses. This can be done in the form of group reporting (5 minutes per group) or as an open discussion. If the following points do not arise as a result of the discussion, the facilitator should ensure that they are raised:

POINTS FOR GUIDED DISCUSSION (LARGE GROUP)
Desirability of the situation described:
A highly competitive situation has been created in the classroom. While some may argue that such situations stimulate gifted students and push the slower students to study harder so that they know the answer next time, others might feel that slower students are largely alienated by such experiences. It might contribute to high absenteeism and possibly even dropout for such students. These are occurrences which teachers in Cambodia want to prevent, not encourage.
The influence of the teaching method described on the moral development of students:
As noted above, the learning environment created in the classroom is competitive. But should there not be reinforcement in schools for "Co-operative" and "helping" behaviors as well? Is a society where helping behavior desirable or not? Clearly, such behavior is desirable but children will not learn to help others if they are continually exposed to situations like the one described in the case study. Indeed, such situations are likely to reinforce behavior, which is self-centered, cruel, and non-caring.
Questions
Does Sopheap really want to help Sokha? Clearly, Sopheap does not want to help Sokha. The teacher's question is rather hypocritical. Sopheap is really answering the question not to help Sokha but to get the positive regard of the teacher. Thus, Sopheap's motivation for answering the question is selfish. Even more importantly, the teacher has encouraged this behavior.

Alternative Responses

How would you have handled this learning task differently? There are a number of different ways in which this situation could have been dealt with more kindly. The teacher might have asked all the other children to put their hands down and worked through a series of follow-up questions with Sokha to get the right answer. Or the teacher might have organized the students so they answered the question as a group. In this way, it is more likely that Sokha would have learned the correct answer more discreetly from friends or if the answer was still wrong, at least responsibility would have been distributed more evenly. Children as well as adults often feel that there is safety in numbers. The latter way of handling this situation rests on an approach which is described as "Co-operative learning."

HANDOUT B

Identifying the Problem

Directions: *Read the following case study and consider the questions below in your groups. Record your answers on a sheet of poster paper for reporting back to the large group.*

Case Study and Study Questions

A teacher of a third grade class began her lesson by reviewing some points on grammar from the previous lesson as follows:

Teacher:	Children, who remembers what part of speech words such as dog, cat, and village belong to?

(Twenty students quickly raise their hands. Another ten students try to hide themselves hoping that the teacher will not call on them. She calls on Sokha.)

Sokha:	Proverb?

(All the students in the class laugh.)

Teacher:	No, that's not quite right.

(The students other than Sokha, whose face has gone red with embarrassment, raise their hands again. Some of them are half way out of their seats calling...)

Teacher:	Does anyone else know?

(Many students shout out)

Students:	Me! Me!

(The teacher turns to another student named, Sopheap)

Teacher:	Sopheap, can you help Sokha to answer the question?

Adapted from: Slavin, R.E., (1993) Cooperative Learning: Theory, Research, and Practice.

Discussion Questions

1. In your opinion, is the learning situation exemplified in the case study above desirable or not. Give reasons for your answer.

2. What kind of effect do you think the occurrence of this kind of competitive questioning has on the moral development of children? (e.g. does it make children considerate and caring of one another? does it make children love learning, etc.)

3. Consider the question that the teacher directs to Sopheap (i.e. "can you help Sokha to answer the question?"). Given the situation that has arisen, do you think Sopheap really wants to answer the question to "help" Sokha? Explain.

4. If you were the teacher above, how would you have handled this learning task differently?

TRAINING ACTIVITY THREE

Key Tenets of Co-operative Learning (1 Hour, 15 Minutes)

1. Objectives
- Participants should now be ready for a description of some of the basic tenets and characteristics of cooperative learning. This description should include its aims/purposes, its advantages, and some basic techniques in its implementation.

2. Procedure
- The facilitator passes out copies of the *Cooperative Learning Guide* and asks participants to read through pages 3 – 11, silently.

- After participants have finished reading, divide the group into four smaller groups and give one of the following questions to each group to discuss and report back.

DISCUSSION QUESTIONS
1. How does Co-operative Learning promote helping behavior?
(Answer: By creating situations in which children must work together to complete a task, cooperation replaces competition.)
2. How does Co-operative Learning improve the motivation of children who learn more slowly than others?
(Answer: By discouraging competitive situations, students who learn more slowly are spared negative reinforcement for incorrect answers; slower students experience success more frequently in solving learning tasks as a group which helps to make learning a positive rather than a negative experience.)
3. List some of the techniques used to practice Co-operative Learning.
(Answer: Group seating arrangements; well defined tasks; establish a division of labor in groups; keep group sizes under 8-9; use mixed ability groupings of students; move back and forth between large and small group presentations; monitor group work and provide support as necessary; allow students to help one another; make sure students take responsibility for their own learning).

Closure and Summary

- A good way to bring closure to the discussion is for the facilitator to summarize some of the major differences between traditional ways of teaching and Co-operative Learning. Before doing this, the facilitator may distribute **Handout C** for participants to complete in their groups. The chart shown in **Handout C** is reproduced below. Give about 10 minutes for this activity.

- When groups have finished completing their handouts, lead a large group discussion in which a large reproduction of the handout is posted on the board so that it can be comleted easily. Ask each group to show how they filled out their tables. The facilitator may then start completing the table, based on group responses.

COMPARISON OF COOPERATIVE LERNING AND TRADITIONAL TEACHING		
Parameter	**Traditional Teaching**	**Co-operative Learning**
1. Student Learning Styles		
2. Students Most Benefited		
3. Efficiency in terms of Time Spent on Task		
4. Number of Students which it can Accommodate		
5. Ability to Foster Helping Behavior		
6. Kind of Evaluation Most Often Use		
7. Role of Teacher		

OPTIONAL

- The facilitator may also prepare desired answers on smaller cards based on the table below Give one complete set of cards with appropriate answers to each group.

- The groups are then instructed to work together to match the cards to the proper place in their handouts, as in the table below.

NOTIONAL REPSONSES		
Parameter	▪ *Traditional Teaching*	▪ *Co-operative Learning*
Student Learning Styles	▪ *Individualistic/Competitive*	▪ *Group Learning/ Cooperative*
Students Most Benefited	▪ *High Achievers*	▪ *Middle and Low Achievers*
Efficiency in terms of Time Spent on Task	▪ *Low/ Only a few students are kept on task during any given lesson*	▪ *High/ Many students are on task simultaneously*
Number of Students which it can Accommodate	▪ *Large classes*	▪ *Small to Medium Classes*
Ability to Foster Helping Behavior	▪ *Low or None*	▪ *High*
Kind of Evaluation Most Often Used	▪ *Summative*	▪ *Formative and Summative*
Role of Teacher	▪ *Disseminator of knowledge* ▪ *Authoritarian*	▪ *Facilitator of learning* ▪ *Monitor of group learning*

- The facilitator then checks the responses and discusses with the large group

HANDOUT C

Comparing Traditional Teaching & Cooperative Learning

Directions: *The facilitator will ask you to make a comparison between Traditional Teaching and Cooperative Learning along several parameters shown in the table below. Based on the parameters indicated in the left-hand column, make a comparison in the space provided in the table by discussing this with the other members of your group.*

Parameter	Traditional Teaching	Co-operative Learning
1. Student Learning Styles		
2. Students Most Benefited		
3. Efficiency in terms of Time Spent on Task		
4. Number of Students which it can Accommodate		
5. Ability to Foster Helping Behavior		
6. Kind of Evaluation Most Often Use		
7. Role of Teacher		

TRAINING ACTIVITY FOUR

Cooperative Learning Techniques in Practice (1 Hour, 30 Minutes)

1. Objectives
- To increase participants understanding of Cooperative Learning techniques through observation and discussion of the training DVD
- To consider how cooperative learning techniques may be incorporated into participants classroom practice.

2. Procedure
- This session will require the viewing of a DVD exemplifying specific Cooperative Learning Techniques. This DVD should be attached to the present manual.

- The facilitator should arrange the participants in groups and give out copies of **Handout D,** which is taken from the *Self-Study Materials* described in **Part 1.**

- The participants are then asked to read **Handout D** and refresh their understanding of the many aspects of Cooperative Learning.

- Divide the participants into groups.

- **If the facilitator is confident to do so and the number of participants is not too large, then a cooperative learning strategy should be adopted for this session, as would be used in a classroom as follows:**
    1. *Create heterogeneous groups – the grouping could be based on a mix of people from different schools/Districts, or people with different jobs*
    2. *Allow each group to select a name for the group*
    3. *Ascribe roles and duties in the group (division of labor)*

- Each group is given an aspect of Cooperative Learning from the handout to focus on during observation of the DVD – if more than five groups divide Aspect 1 (i.e. 1.1 and 1.2).

- The groups make notes while watching the DVD of times when the aspect they are focused on occurs.

- Groups then discuss what they have noted.

- The reporter from each group gives feed back to the large group.

- In the large group, the facilitator should then lead a discussion using the following questions:
    1. What materials did the teachers use for their lessons
    2. Where did the lessons take place?
    3. How did the students react to the lessons

HANDOUT D

Cooperative Learning Techniques in Practice

Directions: *Read through the following aspects of Cooperative Learning provided below. Then, watch a DVD that provides a demonstration of Cooperative Learning in various contexts, including a Grade 2 Class, a Grade 5 Class, and a Grade 8 Class. As you watch the DVD, make notes in the table provided at the end of this Handout.*

Aspects of Cooperative Learning

1. Positive Interdependence

2. Collaborative (social) Skills

3. Processing group interaction

4. Heterogeneous Grouping (mixing students)

5. Individual Accountability

Brief explanation on the main aspects of Cooperative Learning

1. Positive Interdependence

Students perceive that they need each other in order to complete the group's task. The key to doing this successfully to structure the group so that group members clearly get the message that " I can only succeed and do well if the other members in my group also succeed and do well".

1.1 Teachers may promote positive interdependence by:
- Establishing mutual goals (learn and make sure that other group members learn),
- Using joint rewards (if all group members achieve above the criteria, each will receive bonus points),
- Providing resources that have to be shared,
- Assigning roles to individuals,
- Strengthening a feeling of "shared identity" (by asking groups to name their group).
- Each group member's efforts are required and indispensable for group success
- Each group member has a unique contribution to make to the joint effort because of his or her resources and/or role and task responsibilities

1.2 Establishing group roles
Group roles will vary depending on the nature of the task. Some possibilities are:
- Facilitator – leads the discussion and encourages everybody to participate,
- Scribe – takes notes on the group's discussions,
- Time keeper – makes sure the group completes the task in the time set by the teacher
- Reporter – shares the group's ideas with the rest of the class using the scribe's notes
- Illustrator – draws pictures or diagrams needed
- Messenger/collector – relays information to teacher of other groups, and gathers or returns

materials

2. Collaborative (social) Skills

- Praising each other, promoting each other's success
- Listening
- Showing patience
- Keeping each other on task
- Orally explaining how to solve problems
- Teaching one's knowledge to other
- Checking for understanding
- Discussing concepts being learned
- Connecting present with past learning

3. Processing group interaction

- allow children to reflect on how well they are working together
- Group members discuss how well they are achieving their goals and maintaining effective working relationships
- Describe what member actions are helpful and not helpful
- Make decisions about what behaviors to continue or change

4. Heterogeneous Grouping (mixing students)

- past achievements,
- diligence,
- sex,
- religion,
- ethnicity

5. Individual Accountability

- Each student individually takes a quiz, completes a task, or writes an essay when the material is studied.
- Group members are called on at random to answer a question
- Each group member has a designated role to perform. These roles can rotate.
- Each member has different responsibilities for completing different parts of a group project

For your convenience, please complete the following table as you watch the video noting specific examples of each of the Aspects of Cooperative Learning indicated.

Note Taking Table for DVD Observation

Aspects of Cooperative Learning			
	Grade 2	Grade 5	Grade 8
1. Positive Interdependence			
2. Collaborative (social) Skills			
3. Processing group interaction			
4. Heterogeneous Grouping (mixing students)			
5. Individual Accountability			

TRAINING ACTIVITY FIVE

Cooperative Learning Techniques in Lesson Planning (1 Hour and 15 Minutes)

1. Objectives
- Participants identify aspects of cooperative learning
- Participants learn how to incorporate aspects of cooperative learning into their lesson planning.

2. Procedure
▪ The facilitator should arrange the participants in groups and give out copies of **Handout E.**

▪ For this activity, participants also need to refer to **Handout D** or *Part 1* of this manual

▪ **If the facilitator is confident to do so and the number of participants not too large, then a cooperative learning strategy should be adopted for this session, as would be used in a classroom as follows:**
  1. *Create heterogeneous groups – the grouping could be based on a mix of people from different schools/Districts, or people with different jobs*
  2. *Allow each group to select a name for the group*
  3. *Ascribe roles and duties in the group (division of labor)*

▪ The facilitator explains that **Handout E** is a lesson plan for Grade 1 students and reads through the stages of the lesson, making sure participants understand what is taking place.

▪ In their groups the participants discuss the lesson and try to see where cooperative learning techniques have been used using make a list as shown below:

EXERCISE 1: Anticipated responses to identifying the aspects of cooperative learning in Grade 1 lesson

Aspects Of Cooperative Learning Described In The Lesson	What Was the Activity (Suggested Responses Only)
Positive Interdependence	• *Children put in groups* • *Individual children put picture in box*
Collaborative (social) Skills	• *Arranging pictures together around box drawn on table*
Processing group interaction	• *Sequencing of pictures*
Heterogeneous Grouping (mixing students)	• *--*
Individual Accountability	• *Individual member of the group tells the story*

- The facilitator should remember that the responses in the right hand column are suggested only. Groups may come up with alternative answers that equally reasonable.

- One group is, then, chosen to give feedback and their answers are subsequently discussed with all the participants.

- The facilitator should then lead a discussion to encourage brainstorming for ideas of other cooperative learning techniques that could be added to the lesson, besides those already indicated in the lesson plan.

- It might be advised for the facilitator to emphasize that there are more opportunities for heterogeneous grouping of students in the higher grades than in the lower grades, particularly with respect to students' level of maturity and character development, since some students may have developed more quickly than others since Grade 1.

- The facilitator then repeats the training process using **Handout F,** a lesson plan for Grade 5.

EXERCISE 2: Anticipated responses to identifying the aspects of cooperative learning in a Grade 5 lesson

Aspects Of Cooperative Learning Described In The Lesson	What Was the Activity *(Suggested Responses Only)*
Positive Interdependence	• *The groups decide on a name.* • *Allocation of group roles.* • *Marks will be given to the groups on their achievement*
Collaborative (social) Skills	• *Working together using cards to find answers* • *Sharing materials* • *Discussion*
Processing group interaction	• *Making sure all the members in the group understands*
Heterogeneous Grouping (mixing students)	• *Groups contain equal number of boys and girls*
Individual Accountability	• *Individual practice of dividing fractions using logarithms*

HANDOUT E

Cooperative Learning Techniques in Lesson Planning: SEQUENCING IDEAS

Directions: Read the Grade 1 Lesson Plan below individually, then in your groups, identify specific actions done or characteristics of the lesson that exemplify the parameters indicated in the Exercise Sheet at the end of this Handout.

Sequencing Ideas and Listening Tasks (Grade 1)

I. OBJECTIVES

- Students can identify pictures based on a verbal description which they hear.
- Students can sequence events or ideas using pictures.
- Students can express the events they have sequenced verbally.

II. TIME
- 1 hour

III. MATERIALS NEEDED
- A series of pictures (e.g., "The rabbit eats bananas") which when put in sequence tell a story (5 sets for 5 groups)

IV. PROCEDURE

1. Establishing Set: What is the task?
- Prepare the classroom by taking some chalk and drawing a box in the center of the table of each grouping of students. This will help ensure that all students in each group are oriented to a task which should be done as a group.
- Begin the lesson by telling students that you would like them to listen to a story. The story is described by a set of pictures which they will soon be receiving.
- Pass out the pictures to each group (see below) and ask students to place the pictures around the box drawn on their tables. Do not allow only one or two students to hold all the pictures.

2. Getting Familiar with Events in Each Picture through Listening

- Tell students that before hearing the whole story, the teacher is first going to describe an event or object which is shown by a picture. The student(s) sitting nearest to the picture which shows that event or object should place it in the chalk box. Note that these descriptions need not be presented in a specific order. Below are some phrases which might be used in this exercise:
    - *Grandmother picks up a dead rabbit.*
    - *A rabbit eats some bananas.*
    - *Grandmother puts a rabbit in a basket.*
    - *Grandmother is surprised because her basket is filled with banana peels.*
    - *A dead rabbit along the road.*
    - *Grandmother returns home from the orchard.*
    - *A rabbit is sitting in grandmother's basket.*
- Monitor the pictures selected by students in each group after a description.

3. Putting the Story in Order

- When students seem able to match pictures with verbal descriptions, tell the story of " The rabbit Eating Bananas" from beginning to end.
- When the teacher has finished telling the story, write the numbers 1 to 4 in the chalk box on students' tables:

1	2	3	4

- Then, ask students to place the pictures in sequence according to the story that they have heard. The picture showing the first event in the story should be placed above the number 1, second event above the number 2, and so on.
- Monitor this activity in each group as it is occurring. If a group has placed a picture in a sequence different from that expected, try to elicit an explanation from students as to what they see happening in that picture. If their explanation matches the story which they have heard, allow the group to keep the pictures in that sequence along with their interpretation of the picture.

4. Telling the Story (Optional)

- When students have finished sequencing their pictures, ask a member of each group to tell the story again according to each picture. One group might be asked, 'What happened first?', while another group might answer the question, 'What happened next?', and so on.
- Students might also tell their stories to one another in their groups, each student telling the story in turn, pointing to a picture as they do so. The teacher should monitor.

CAN YOU DO IT?!!

EXERCISE 1: Complete the table below based on your reading of the Grade 1 lesson plan

Aspects Of Cooperative Learning Described In The Lesson	What Was the Activity
Positive Interdependence	
Collaborative (social) Skills	
Processing group interaction	
Heterogeneous Grouping (mixing students)	
Individual Accountability	

HANDOUT F

Cooperative Learning Techniques in Lesson Planning: DIVIDING FRACTIONS

Directions: *Read the Grade 5 Lesson Plan below individually, then in your groups, identify specific actions done or characteristics of the lesson that exemplify the parameters indicated in the Exercise Sheet at the end of this Handout.*

Dividing Fractions

I. OBJECTIVES

- Students can divide fractions using concrete materials.
- Students can divide fractions by using the appropriate logarithm.
- Students can solve word problems involving the division of fractions.

II. TIME

- 1 Hour

III. MATERIALS

- Fractional Division Number Set (5 sets)
- Some word problems involving the division of fractions (written on cards or the blackboard)

IV. PROCEDURE

1. Establishing Set - Review of Division of Whole Numbers

- Arrange students so that they are sitting in five groups that contain an equal balance of boys and girls. The groups then decide on a name. The teacher explains that the groups are to work together to make sure that everybody in the group understands, one person should be the recorder and one person the reporter. Marks will be given to the groups based on their achievement.

- Write a simple number problem on the board involving the division of whole numbers such as $6 \div 3$. Ask students the answer to this problem. Write out the answer on the board: $6 \div 3 = 2$. Then ask students what this answer means exactly. That is, how would you explain the meaning of this number sentence in simple English? One way of saying this is that $6 \div 3 = 2$ means that there are 2 sets of 3 in the number 6.

2. Converting Division of Fraction Problems into Simple Language

- When the teacher has finished reviewing the division of whole numbers in the way above, try to apply similar reasoning to the division of fractions. For example, what does the number problem, $\frac{1}{2} \div \frac{1}{4} = ?$ mean in simple language?

- Write the following conversion on the board: $\frac{1}{2} \div \frac{1}{4} = ?$ means "How many fourths are there in one half?"

- Write additional division problems involving fractions on the board and ask students to convert them to a question using words in the same way.

3. Dividing Fractions Using Concrete Materials

When the teacher has finished with the conversions of division problems into language questions, pass out a Fractional Division Set, consisting of a set of cards with different fractions marked on them, to each group of students. Ask students to distribute the cards in the set equally to each student in their group so that one student is holding all the cards marked $\frac{1}{2}$, another those marked $\frac{1}{4}$, etc.

- Point out that each card represents a fractional part of the card marked with a "1". For example, the card marked $\frac{1}{2}$ is exactly one half of the card marked "1", while the card with $\frac{1}{4}$ is exactly one-half of the card marked $\frac{1}{2}$, etc.

- Return to the division problem which was converted to a language question above (i.e., $\frac{1}{2} \div \frac{1}{4} = ?$).

  Ask the student who is holding the card marked one-half to place it in the middle of the table. Then ask the student holding the cards marked with one quarter to place them under the card representing one half as shown below:
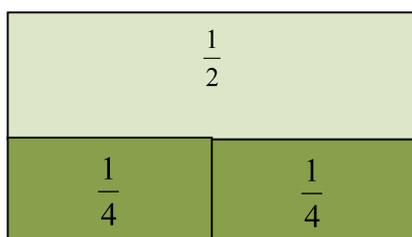
- **Given that $\frac{1}{2} \div \frac{1}{4} = ?$ "How many quarters are there in one half?", students should be able to answer readily that the answer is "2." Thus, $\frac{1}{2} \div \frac{1}{4} = 2$. Write similar division problems on the board, which can be solved using the cards distributed to each group, such as the following:**

$$\frac{1}{2} \div \frac{1}{6} = ? \quad / \quad \frac{1}{3} \div \frac{1}{6} = ? \quad / \quad \frac{1}{4} \div \frac{1}{8} = ? \quad / \quad \frac{2}{3} \div \frac{1}{6} = ? \quad / \quad 1\frac{1}{2} \div \frac{3}{4} = ?$$

- In their groups, ask students to solve each of these division problems given above using the cards provided.

- Students discuss together to agree on an appropriate answer to each number problem and the teacher will monitor any problems, which students seem unable to solve,

- When the group agrees on all the appropriate answers, one of the students records the answers accordingly.

- The teacher then reviews the answers on board and gives points to each group, based on what

they found.

4. Dividing Fractions Using a Logarithm

- When the teacher is satisfied that students are able to divide fractions using concrete materials, return to the original problem:

$$\frac{1}{2} \div \frac{1}{4} = 2$$

- Ask students what happens if they invert the fraction one fourth and multiply it:

$$\frac{1}{2} \quad X \quad \frac{4}{1} \quad = \quad \frac{4}{2} \quad = \quad \frac{2}{1}$$

- When students see that this formula yields the same answer as they found by using concrete materials, explain that inverting the divisor and multiplying is a short way of solving problems involving the division of fractions.

- Let the students practice individually dividing following fractions using a logarithm:

$$\frac{1}{2} \div \frac{1}{6} = ? \quad / \quad \frac{1}{3} \div \frac{1}{6} = ? \quad / \quad \frac{1}{4} \div \frac{1}{8} = ? \quad / \quad \frac{2}{3} \div \frac{1}{6} = ? \quad / \quad 1\frac{1}{2} \div \frac{3}{4} = ?$$

5. Solving Verbal Problems Involving the Division of Fractions

- Write the following verbal problem on the board:

Ly had three fourths of a tank of gas in his motorcycle. If he used one eighth of a tank of gas to go back and forth to work each day, how many days would it be before he had used all the gas in his motorcycle?

- Ask students in their groups to solve this problem first using the concrete materials distributed earlier and then to check their answers by using the logarithm explained above. Monitor individual group work.

- Ask a representative from each group to report on their answers. Review and correct as needed.

- Teacher reviews responses and assigns points for each group's answer.

CAN YOU DO IT?!!

EXERCISE 2: Complete the table below based on your reading of the Grade 5 lesson plan

Aspects Of Cooperative Learning Described In The Lesson	What Was the Activity
Positive Interdependence	
Collaborative (social) Skills	
Processing group interaction	
Heterogeneous Grouping (mixing students)	
Individual Accountability	

TRAINING ACTIVITY SIX

Other Cooperative Learning Techniques – Think, Pair, Share (1 Hour, 10 Minutes)

1. Objectives
- Participants are introduced to another technique that can support cooperative learning techniques

2. Procedure

*What is **Think, Pair, & Share**? (10 minutes)*

- Facilitator introduces this topic by explaining that **Think, Pair, Share** is a strategy designed to provide students with "food for thought" on a given topic, enabling them to formulate individual ideas and share these ideas with another student. It is a learning strategy developed to encourage student classroom participation. Rather than using a basic recitation method in which a teacher poses a question and one student offers a response, Think-Pair-Share encourages a high degree of pupil response and can help keep students on task. The main idea in each of the three parts of this strategy are summarized below:

Think	During a lesson the teacher will pose a question and tell the students to think about the answer quietly by themselves, ……
Pair	Then, discuss the answer in pairs ……
Share	And finally the teacher will ask students to give answers to the class

*What is the purpose of **Think, Pair, Share** (15 minutes)*

- Using a previously prepared poster such as the one shown to the right, the facilitator highlights and discusses the main purposes of **Think, Pair, Share.**

- It is also advised to pass out a copy of these tips such as that shown in the **Handout G**

- In providing this explanation, be sure to give appropriate examples such as the following:
  - *Which do you think children are more likely to remember, copying down a list of scientific principles about temperature or performing*

> **Poster: Purpose of Think, Pair, Share**
>
> - To provide "thinking time" which increases quality of student responses.
>
> - To provide time to mentally "chew over" new ideas in order to store them in memory. When teachers present too much information all at once, much of that information is lost. If we give students time to "think-pair-share" throughout the lesson, more of the critical information is retained.
>
> - To give students a chance talk over new ideas, in order that they are encouraged to make sense of those new ideas in terms of their prior knowledge. Their misunderstandings about the topic are often revealed (and resolved) during this discussion stage.

an experiment where they have an opportunity to discuss those principles with their classmates?

- *Tips on the Use of Think, Pair, Share (15 minutes)*

- Using a previously prepared poster, the facilitator explains the tips shown in the box to the right.

- It is also advised to pass out a copy of these tips such as that shown in **Handout G**

Student Benefits (30 minutes)

- The facilitator next organises the participants into groups to discuss what the benefits are to students of using **Think, Pair, Share,**

- After discussing this in groups for about 15 minutes, each group should be allowed to quickly present the benefits that they identified. Possible answers might include the following:

> **Poster**: **Tips on the use of Think, Pair, Share**
>
> - Give Think Time - Be sure to provide adequate "think time." Let the students indicate when they are ready to "share"
>
> - Assign Partners – You may need to assign discussion partners rather than just saying "Turn to a partner and talk it over." When you don't assign partners, students frequently turn to the most popular student and leave the other person out.
>
> - Change Partners - Switch the discussion partners frequently. With students seated in groups, they can pair with the person beside them for one discussion and the person across from them for the next discussion.
>
> - Monitor Discussions - Walk around and monitor the discussion stage. You will frequently hear misunderstandings that you can address during the whole-group discussion that follows.

Possible Benefits of *Think, Pair, Share*
▪ Students are given time to think through their own answers to the question(s) before the questions are answered by other peers and the discussion moves on.
▪ This strategy provides an opportunity for all students to share their thinking with at least one other student; this, in turn, increases their sense of involvement in classroom learning.
▪ Benefits students in the areas of peer acceptance – students will get on better together
▪ Peer support
▪ Low achieving students can be helped thus increasing student
▪ Students spend more time on task and listen to each other more when engaged in Think-Pair-Share
▪ Students also have the opportunity to think aloud with another student about their responses before being asked to share their ideas publicly.
▪ More students are willing to respond in large groups after they have been able to share their responses in pairs.
▪ The quality of students' responses also improves.

HANDOUT G

Purpose of <u>Think, Pair, Share</u> and Tips on Using this Technique

Purpose of Think, Pair, Share
• To provide "thinking time" which increases quality of student responses.
• To provide time to mentally "chew over" new ideas in order to store them in memory. When teachers present too much information all at once, much of that information is lost. If we give students time to "think-pair-share" throughout the lesson, more of the critical information is retained.
• To give students a chance talk over new ideas, in order that they are encouraged to make sense of those new ideas in terms of their prior knowledge. Their misunderstandings about the topic are often revealed (and resolved) during this discussion stage

Tips on the Use of Think, Pair, Share
• Give Think Time - Be sure to provide adequate "think time." Let the students indicate when they are ready to "share"
• Assign Partners – You may need to assign discussion partners rather than just saying "Turn to a partner and talk it over." When you don't assign partners, students frequently turn to the most popular student and leave the other person out.
• Change Partners - Switch the discussion partners frequently. With students seated in groups, they can pair with the person beside them for one discussion and the person across from them for the next discussion.
• Monitor Discussions - Walk around and monitor the discussion stage. You will frequently hear misunderstandings that you can address during the whole-group discussion that follows.

TRAINING ACTIVITY SEVEN

Common Problems When Using Cooperative Learning Techniques (1 Hour)

1. Objectives
- Participants are able to identify key problems in using Cooperative Learning strategies.
- Participants are able to identify practical solutions to the problems in using Cooperative Learning strategies.

2. Procedure
- As a large group, lead a discussion with participants that identifies some of the most common problems in using Cooperative Learning in the classroom. List these on the board.

- Using the list in the table below, make sure that all of the problems indicated are raised in the large group discussion, if participants should fail to mention any.

COMMON PROBLEMS WHEN USING COOPERATIVE LEARNING	POSSIBLE SOLUTIONS
1. Group size is too large – too many students in the group	*It takes a lot of skill for students to manage a group of more than 5. Smaller groups are more effective and take less time.*
2. Students don't know what to do in their groups; Some students are not engaged in the group.	*Explain to students why you are using cooperative learning. Do a short fun cooperative learning activity. Ask students to explain how it can help them. Initially, do short get-acquainted and review activities. – see below for class cooperative activities*
3. Students lack appropriate interaction skills	*Ask students to contribute to a list of rules for the class and for working in groups. Examples: stay on task, contribute ideas, help others learn, encourage everyone to participate, listen with care, show respect for others. Display the list and remind students to use it. Add to the list as needed.*
4. Children do not want to change groups	*We would all prefer to work with our friends but sometimes this is not the best arrangement for group learning. Students need to develop positive working relationships with all class members. Change groups often enough so no-one gets stuck for long periods with a difficult class member. Use groups to encourage peer support by having learners of different abilities*
5. Cooperative Learning does not happen often enough for students to develop cooperative skills	*Try to have students do something cooperative at each class session to reinforce positive cooperative habits. If nothing else, have them share what they learned with a partner. –see pair, talk, share*
6. Teachers do not plan cooperative lessons with care	*It is not enough to put children into groups and hope that they will work well together. Remember that Cooperative Learning groups have the five essential elements (positive interdependence, individual accountability, face-to-face promotive interaction, social skills and processing) built carefully into every lesson to teach the students to learn well together. Learn how to include them in each cooperative lesson.*
7. Teachers start with complex tasks before students have	*Students must be taught how to learn together. Start with short, simple activities and progress to longer and more significant ones*

COMMON PROBLEMS WHEN USING COOPERATIVE LEARNING	POSSIBLE SOLUTIONS
learned how to complete simple ones successfully	*as your students are successful. Have frequent class discussions on what helps the groups do well.*
8. There is no individual accountability for class work	*Often teachers will emphasise paper or project completion as a group goal. This can mean that one or two students do the work while the others do nothing. Lessons should ensure individual accountability is possible e.g. a test taken individually, teacher asking questions randomly, a class presentation, or a follow-up task that is completed alone*
9. The group is unclear of the learning goal	*Make sure the groups know and understand the learning goal and that it is easily measurable. Example: You are finished when every member in your group can explain the work and/or pass a quiz.*
10. Children lack the necessary social interaction skills .	*You must teach them how to coordinate their work with others and keep everyone included in the learning. Do this by helping them see the need for social skills, showing them exactly what to do, and having them practice. Use fun activities where possible and by coaching and giving feedback cooperative will become automatic.*
11. Teachers do not carefully monitor students while they are working in their groups	*This is TEACHING time. Be among the groups - correcting misconceptions, helping students understand, and reinforcing good teamwork skills. Monitor the groups carefully by observing interactions and encouraging appropriate learning and teamwork skills. Help the groups ensure mastery by every student. Keep individuals on their toes by asking them at random to explain their group's work.*

- When the facilitator has completed the discussion, pass out **Handout H,** which summarizes the problems just discussed. Ask participants to discuss the problems in their groups and then identify possible solutions. Participants may also add to the list if they think of other problems.

- When each group has made a short list of solutions, review these possible solutions as a large group. Use the solutions listed in the table above to help guide this discussion.

HANDOUT H

Common Problems When Using Cooperative Learning

Directions: In your groups, identify possible solutions to each of the problems identified in the left-hand column. If you think of some problems not listed, please add them at the bottom of the table and state a possible solution.

COMMON PROBLEMS WHEN USING COOPERATIVE LEARNING	POSSIBLE SOLUTIONS
1. Group size is too large – too many students in the group	
2. Students don't know what to do in their groups; Some students are not engaged in the group.	
3. Students lack appropriate interaction skills	
4. Children do not want to change groups	
5. Cooperative Learning does not happen often enough for students to develop cooperative skills	
6. Teachers do not plan cooperative lessons with care	
7. Teachers start with complex tasks before students have learned how to complete simple ones successfully	
8. There is no individual accountability for class work	
9. The group is unclear of the learning goal	
10. Children lack the necessary social interaction skills .	
11. Teachers do not carefully monitor students while they are working in their groups	
12.	
13.	

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