Title	What teachers do: Vignettes of groupwork in some Singapore primary classrooms
Author(s)	Joy Chew, Maureen Ng, Christine Lee, Audrey Ambrose-Yeoh, Boo Hong Kwen, Vilma D'Rozario, George M. Jacobs and Patrick B. Gallo
Source	*MERA-ERA Joint Conference, Malacca, Malaysia, 1-3 December 1999*

WHAT TEACHERS DO: VIGNETTES OF GROUPWORK IN SOME SINGAPORE PRIMARY CLASSROOMS[1]

Joy Chew, Maureen Ng, Christine Lee, Audrey Ambrose-Yeoh, Boo Hong Kwen & Vilma D'Rozario
Nanyang Technological University, Singapore

George M Jacobs & Patrick B Gallo
SEAMEO Regional Language Centre, Singapore

Abstract: A challenge that schools face in the new millennium is to create in our classrooms learning communities where pupils are learning, exploring, talking and communicating within a positive classroom culture. Creating such classrooms requires a careful look at how teachers attempt to construct the learning environment. This paper reports on what teachers actually do in their classrooms, with special focus on how they use groupwork in their lessons. It is part of a wider study of classroom organization in Singapore primary schools. Approximately seventy classroom observations of English, Math, Science and Social Studies lessons were gathered. Based on these observations, vignettes of what took place were constructed. The vignettes mirror what the teachers did within the walls of the classroom and reflect their interpretation and personal methods of using groupwork or cooperative learning. The paper will report some of our data on interesting practices that were observed. These reflect how cooperative learning techniques were shaped by teachers, surprising moves and faltering implementation. The teachers used groupwork in different ways and were at different stages of comfort using its techniques. The paper will report on personal adaptations by teachers whose years of experience, beliefs and practical knowledge influenced how they planned and used groupwork. The study is a qualitative one. This paper will consist of the stories of lessons that featured interesting practices. Through this experience, we now have a better understanding of the process of implementation of the groupwork method in our schools.

Introduction

Looking into real classrooms – what teachers actually do – is crucial to understanding the process of instructional reform. The purpose of "looking within" provides a micro view of what teachers do. Details may be noted – specific actions and critical events – for they help us identify how teachers are adopting or modifying instructional strategies that are introduced as instructional innovations or that accompany the implementation of new curricular materials.

Spillane & Zeuli (1999) noted a need to "unpack instruction" and "examine patterns of practices". They pointed out that it is easy to "gloss over patterns of change in instruction" when in reality, the process of change "progresses unevenly among teachers". For researchers, there is no better way of getting at the patterns of teachers' classroom practice than by making observations of what goes on during lessons taught by teachers. Observations can be followed by interviews with the teachers on their lessons and experience of organising classroom activities for planned outcomes such as cooperation or higher order thinking. This paper reports on what three teachers actually did in their classrooms and focuses on how they used groupwork in their lessons. It is part of a larger study of classroom organisation in Singapore primary schools.

[1] The researchers wish to acknowledge the contribution of Prof Jean Rudduck to phase 2 of the research project on Primary Classroom Organisation and School Effectiveness and appreciate her suggestions and critical comment during the writing of the research monograph.

Purpose and Context

The writers have been training teachers in cooperative learning (CL) and share a concern for the proper implementation of CL in schools. This study could help point to areas where teacher training may be improved or further professional development directed. Following in-service training and workshops on instructional methodologies, teachers should be given time and continual support to implement CL. Putnam (1993), for example, estimated that it could take teachers 2-3 years including using the method and sharing their successes and failures with colleagues, before they would feel really comfortable with the approach. Moreover, trainers have much to learn from teachers who are the ultimate users of the strategies, and who refine and improve on them in practice.

When we began our investigation of classroom organisation in Singapore primary schools, we carried out a survey with 324 teachers in thirteen primary schools'. There was a need for some baseline data on teacher's' classroom practices. The survey confirmed that whole-class instruction was the dominant form used by teachers in Singapore (Chew, Ng, Lee, D'Rozario, 1997) and whole-class instruction was usually combined with individual work. Individual work was used most for the examination subjects, for practice exercises or written work. The preponderance of whole-class instruction was true for all subjects at the lower and upper primary level, irrespective of whether these were examinable or non-examination subjects like Art, Music and Physical Education. Teachers indicated that they used groupwork in combination with whole-class instruction for Science and Social Studies lessons.

Typically, the primary school teacher would begin her lesson by introducing the new content and explaining the subject matter to the class as a whole for about 10-15 minutes. Pupils who are able to work on individual assignments using worksheets are expected to carry on with their work. The weaker pupils who have not grasped the lesson content will be taught again in a smaller group. For Science lessons, some form of groupwork is used when groups of 6-7 pupils collaborate on shared observational tasks and use a set of apparatus at their work stations in the science room. Teachers who were surveyed often referred to time and space constraints as the main reasons for the limited use of groupwork during lessons. (Chew, Ng, Lee, D'Rozario, 1997, p.14). But the primary reason for resorting to didactic teaching and whole-class instruction is thecurrent assessment system where pupils are tested individually by written examinations for mastery of the subject syllabuses.

The past two years in Singapore have seen increased efforts being made by the Ministry of Education (MOE) to reform the education system. There is now a deliberate move to redesign the school system from what is described as a highly centralised, 'efficiency-driven' system to creating a system that is 'ability-driven' (MOE, 1999). The MOE has articulated its vision to produce a more flexible school system that seeks to develop the unique talents and abilities of every child, harnessing creativity and moving towards holistic education. The challenge to educators and school administrators is to develop the school as a learning environment that encourages creative and independent learners who are able to work collaboratively with others.

Cooperative learning has featured quite prominently in recent efforts toward changing classroom teaching. One of the desired outcomes of schooling that has been spelled out by the MOE is that pupils be able to work with others as teams and acquire the strong interpersonal skills to enable them to problem-solve, process and apply knowledge (MOE, 1998). Pedagogically, this would mean no less than re-culturing teachers on how to work together for classroom instruction and promote learning in groups. The implementation of cooperative learning for classroom tasks, if it is to be taken seriously by teachers rooted in a tradition of didactic teaching, would require considerable a major shift in the way teachers organise their instructional activities.

The Challenge of Reforming Teaching

Reforming teaching in schools presents an immense challenge because the "core technology of schooling – classroom instruction – is difficult to change" (Spillane & Zeuli, 1999). The reforms will not take root if they are perceived by teachers to be "impracticable in the daily experience of classroom teaching". Stenhouse (1975) had noted that "new teaching strategies are extremely difficult to learn, especially when they cut across old habits and assumptions and invalidate hard-won skills".

As an example, a project on the implementation of CL in a Singapore primary school by Lee et al (1999) noted that although all the teachers had received CL training through school-based workshops, only one of the four teachers had tried the approach with her pupils. It was only when the three other teachers "had little choice" that they adopted the method as part of their school's involvement in the research project. They were cautious about launching into the use of cooperative groupwork even though their principal had assured them that they would be given the necessary support to participate in the project. This included using a team approach for them to work together with the university researchers and trainers.

Rudduck (1986) believed that what is important is that teachers as well as pupils are helped to "understand the meaning of the curriculum change" in the introduction of complex instructional innovations. Effective change can come about only when there is a shared understanding of the intended change among the teacher and her pupils. It is not enough that teachers be given training on the know-how of the innovation and be expected to get on with the business of putting newly acquired training and ideas to work. There is a need for change in the culture of the working group, an aspect that tends to be neglected by trainers and those charged with the management of the curriculum project at the school level.

Neither is the change process "monolithic", for learning and using a new instructional method progresses unevenly among teachers (Spillane & Zeuli, 1999). While some teachers may undertake innovations at great speed, others do so in "modest steps". This happens as teachers have diverse background experiences, hold different beliefs about teaching and encounter experiences that are unique to themselves. Teachers moreover adapt and transform the established theoretical models, often picking only those elements that they regard as useful (Rich, 1990, Antil, Jenkins & Wayne, 1998).

In the training, transfer and long-term use of CL, Johnson & Johnson (1998) have identified three assumptions commonly made by trainers that interfere with the effectiveness of staff development:

- The first is *training teachers as technicians* through the use of prepackaged strategies, activities and lessons that can be added to the teachers' bag of tricks. They prefer a view of teachers as *engineers* who will be able to *construct cooperative lessons* "tailored to their specific circumstances" from a thorough knowledge of the five basic elements that make cooperation work.
- A second barrier is the *individualistic perspective*. This is where staff development is aimed at training individual teachers, an approach that may not be effective. Changing instructional practices, they argue, cannot be done effectively in isolation from colleagues but require developing a *team perspective*.
- The third barrier is to focus on *changing teachers' heads, not hearts*. The approach here assumes that the commitment of teachers to change their teaching is intellectually based. Thus, when teachers have been trained in an instructional strategy such as CL, they will in fact implement it. Johnson argues that while intellectual understanding is important, "most teachers who persist in

the arduous work of continuously improving their expertise in using cooperative learning do so because of what is in their *heart*".

Principles of the Cooperative Learning Approach

- The process of implementing cooperative learning requires major shifts in the way that teachers organise and manage groupwork their classrooms. The following identifies the basic characteristics that distinguish cooperative learning from traditional groupwork:
- *Positive interdependence* is the essence of cooperative learning – it is achieved when students think in terms of "we instead of me".
- All students should be held *individually accountable* for learning the material and contributing to the group. Individual evaluations are essential in determining whether each student has mastered the material.
- Students should be required to practice *social and groupwork skills* within their groups. Teachers should provide social skills training by defining the skill, explaining its importance, demonstrating the skill, setting up practice in the groups and giving students feedback on how well they are using the skill.
- Students should interact directly with one another while they are working *(face-to-face interaction).*
- *Group processing* is conducted at the close of a cooperative learning activity or series of activities, when students evaluate how well their group has functioned and whether their group goals were achieved.
- Teachers should strive for heterogeneity when assigning students to groups.

What research says of how teachers use cooperative learning

Antil et al's (1998) study examined the prevalence, conceptualization and form of cooperative learning used by elementary school teachers. The majority of teachers subscribed to cooperative learning to achieve both academic and social learning goals, structured tasks for positive interdependence and taught students skills for working in small groups. Responding to a survey, 93% of teachers (n=85) from six elementary schools in Washington State, USA, indicated they used cooperative learning. In interviews with a subset of teachers (n=21), all indicated that having daily cooperative lessons in several subjects.

However, when the researchers interviewed teachers on how they encouraged children to work together, they found that few of the teachers were employing recognised forms of cooperative learning. Most of the teachers had constructed a version of cooperative learning that suited their classroom, each version an "amalgamation of ideas gleaned from in-service training, colleagues and personal experience"(p 433). Whilst the teachers were using cooperative learning forms that differed in some ways from the researcher-developed models, all the 21 teachers interviewed mentioned using at least one of Johnson and Johnson's defining elements and most indicated use of several elements (median = 3.5), and only one teacher incorporated all five criteria. The researchers concluded that teachers "who are oriented to the practical" may judge cooperative learning models to be too complicated and arduous.

Rich, in writing about the ideological impediments to the implementation of CL in schools (1990) also noted about the all too familiar fate of CL as an instructional innovation after its introduction to schools in Israel and the US by educational agencies and supported by staff development and

training activities. CL is rarely implemented by teachers for any extended period of time after the project initiators leave the school scene. It often becomes one of the methods used sparingly by teachers to vary their classroom instruction. At best, for many teachers, elements of CL were unsystematically blended into other teaching routines.

Methodology

Classroom Observations & Data Collection

Classroom observations of teachers using groupwork were conducted over two months in October – November 1998 in six primary schools and six teachers in each school were selected by the school principal or head of department. A second round of classroom observations was conducted in March – April 1999 in the same schools, with different teachers. The teachers had varying years of teaching experience. The research team observed almost seventy lessons in four content curriculum areas – English, Math, Social Studies and Science – at the lower (P1-P3) and upper (P4-P6) primary levels. Each lesson lasted one hour. Lesson planning was done by the teachers, without any discussion with the researchers. The researchers were careful not to influence how the teachers used groupwork as the purpose was to record how they were using the approach.

During the lesson, the researcher tried to be unobtrusive and were seated at the back of the room, note-taking with paper and pencil. Each lesson was recorded in detail, using a proforma form as a guide. The observation notes were narrative descriptions of the lesson, as the observers concentrated at this stage on compiling neutral accounts of what took place. A short interview with the teacher followed the lesson, where the researcher asked the teacher questions about how they typically used groupwork, and clarified some points in the lesson. The researchers then returned to their offices and independently added their reflections to the observation notes. The researchers' reflections focussed on six aspects: whole-class teaching / groupwork / social skills / teacher-pupil communication / surprises in the lesson / post-groupwork.

The process of data analysis involved one research team member undertaking the task of reading all the observation notes. Observer notes were reduced to a matrix form which enabled cross analysis of groupwork practices. The conceptual frame used to analyse the groupwork practices was the key principles of cooperative learning. Apart from the inclusion of the key elements, evidence was sought of adaptations the teachers had made in practice which could reflect their understanding of the cooperative learning approach and their beliefs about learning.

The Teachers and Class Settings

Most of the teachers had between 5-10 years of experience, but there were some beginning teachers (3-4 months into teaching) and other very experienced ones with over 20 years of teaching. Half of the teachers had some form of cooperative learning training during their teacher preparation course, inservice courses or had attended CL workshops. The teachers who had no training in cooperative learning had all heard about the approach, usually from their colleagues.

Only three classroom observations have been selected for discussion in this paper. Vignettes of what took place in the lessons were constructed to describe the flow of teaching activities planned and executed by the three experienced teachers during their lessons. Each lesson lasted an hour and so there was sufficient time for the teacher to include some form of groupwork including the use of some CL elements. All three teachers had large class enrolments of between 39 to 43 pupils which by itself would present a great challenge for the effective management of groupwork.

The teachers whose classroom practices are described in this paper can be counted as being among the best in their school in terms of their teaching abilities and classroom management skills. Two of them showed much enthusiasm and commitment to CL and used the approach frequently. The third teacher did not use the method often as she had not been trained in it. By taking a close-up view of these teachers' classroom practices, it is possible to identify emergent issues about the teacher's implementation and interpretation of groupwork, whole class instruction and their attempts at using some CL techniques.

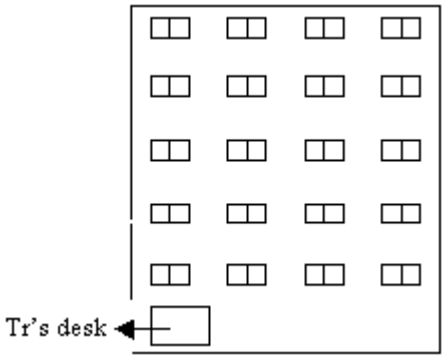
Vignette 1

Ms Menon, who was in her mid-30s, has had eight years of teaching experience. She had already been using CL regularly and was continuing to add to her repertoire of CL techniques through further training and reading.

An English Language Lesson – Writing Character Profiles

It was a rather cramped Primary 3 classroom with the children – 43 boys and girls – seated in traditional fashion. The children were arranged by their teacher in rows with their base group partners.

Class seating arrangement



The class had been working on the theme "Being Prepared". In this lesson, they were to learn to construct a "character profile". The teacher had selected the story of William Tell for the exercise.

The lesson pattern was as follows:

Pairwork	Small group	Whole-class	Small group	Whole-class	Pairwork
Think-pair-share	*Think-pair-share*	Teacher explanation	*Sequential roundtable*	Team reporting	Find-a fib
11.30am →	11.37am →	11.50am →	12 noon →	12.15pm →	12.35pm

Pairwork

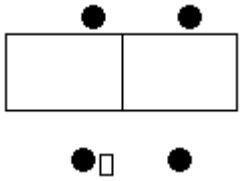
The teacher distributed a handout – an extract of the story of William Tell. She announced: "I will give you one minute of thinking time... Who are the characters in the story?" *The children read silently for one minute and were then told:* "You are going to do a pair-share… I want you to ask your partner very politely – Can you tell me who the characters in this story are? If your partner has it right, you will say 'You did very well… and give your partner a pat on the back.. Now start."

Pupil-pupil interaction began as the children turned to their partners and talked. Soon, two boys were patting each other on the back! The pairwork was stopped after three minutes. The teacher asked: "Did your friend get it right? … what did you do? … I saw some of you talking and you were … looking down at the table… What should you do? … Look the person in the eye!"

Groupwork

Instructions for the task were given: *"I want you to talk about this story. You have to choose one character, e.g. Gessler, William Tell, one of the soldiers... Spend about 1½ minutes to decide which person you want."* The teacher repeated her instructions before allowing the children to begin the group activity.

Groupwork arrangement: *2 students turn around to form groups of 4*



*to signal "time-out", the teacher used a sharp *clap* and the attention signal. She made a quick check of characters by calling a representative from each group to name the character they had chosen. With the children still in their groups, the teacher announced the next activity. First, the children were to work alone. Each pupil had a personal white board and marker on which they were to write their thoughts.* "Now you are going to spend some time writing on your acrylic boards what you think about the character. Start now." *The teacher reminded the class that there was to be no discussion yet. She added that they were not to* "describe" *the story but to write about the character… Another *clap* signalled time for the children to show their work to their group members:* "This is what I want you to do next… who's turn is it to show?… (some students raise their hands)… ready?… go!"

Whole-class

*The teacher switched to whole-class teaching, to explain how a character analysis is done. Using 'Gessler' as an example, the teacher asked: "*What did he do? Why did he behave that way? What sort of person was he? … From his action, what kind of person was he?" *Probing for character traits (e.g., wicked, proud, power hungry) was difficult, and the teacher chose to use guided questions and elicited responses from the children.*

Groupwork

*The children worked in their groups again, but no specific CL structure was named. The children had their heads together as they did the character profiling exercise. The teacher moved around, stopping at some groups to help. Suddenly, she halted the activity with a *clap* and the attention signal:* "I see some of you have just one person writing… that is not acceptable – there are four persons in the group – find four actions – each one must write something… go!"

Group presentations

"I will give you a few seconds to decide who will present. If you have presented before, get someone else in your group to present. Make sure you pick someone with a loud and clear voice… *Three groups were picked to present.*

Pairwork

The last activity of the lesson was "Find a Fib". *The children had obviously done this before and enjoyed it. Each child was told to write three sentences about William Tell of which one or two would be inaccurate. When they had written their sentences, pairs exchanged sentences to find the "fib" in their partner's sentences. The children thoroughly enjoyed this short activity. Before the teacher took her leave, these were her parting words:* "I noticed that some of you were giving your partner a pat".

Emergent Issues

- Classroom organisation in this lesson switched between whole-class, individual, pair and groupwork. The children were expected at different times to work in a different mode – listen, think alone, write, speak in pairs or discuss in groups. In spite of the changes, the transitions between activities were smooth and there was no confusion.
- A particularly striking feature was the disciplined management of cooperative learning. The children were not left to work as they wished. They were told exactly how they were to work with their partners or in their groups.
- The teacher used CL structures but simplified the steps. She did not simply say – use think-pair-share, but took the children through the structure a step at a time: "First I want you to think about this question alone – I will give you 1 minute".
- 1-2 minutes was all time the children were given for a task and the lesson pace was brisk. One however wonders if there were some children who could not keep up.
- High expectations were conveyed – the teacher was task-oriented and monitored the children's behaviour. She also encouraged practice of social skills and gave the children feedback on their behaviour.
- There were no "group leaders". Instead, turn-taking was encouraged. The children were allowed to pick the person to do the reporting and they were reminded that this should not be the person who did the reporting in the previous lesson.
- The task – writing character profiles – seemed quite a sophisticated accomplishment for 9 year-olds. It was however successfully carried out through careful design. The task was divided into sub-tasks and the CL structure was varied for each task. Simpler tasks were done in pairs and the most complex – analysing a character – was done in groups.

Vignette 2

With 24 years in the teaching service, Mrs Tan has held positions of responsibility including that of department head. As Head of the English department at the school, she was taking a lead in promoting cooperative learning in language teaching.

An English Language Lesson – "Using a Thesaurus"

In this unit on library skills, the teacher had planned a lesson on using the thesaurus, following an earlier lesson on using the dictionary. The lesson objective was to encourage the children (a Primary 5 class) to extend their vocabulary and use varied adjectives in their own writing.

The lesson pattern was as follows:

Whole-class	Pairwork	Groupwork	Whole-class	Pairwork
Introduction & instruction	*Turn to your neighbour*	*JIGSAW I*	To check understanding	No CL structure named
2.04pm →	2.13pm →	2.17pm →	2.47pm →	2.55pm

Whole-class

The teacher read a newspaper article to the class. As she read, the children were to note some interesting phrases and expressions that described the events – 'harrowing near-death experience', 'the police coaxed them and rescued them in the nick of time'. She exhorted the children to learn to use a greater variety of phrases in their compositions. The use of a thesaurus was explained.

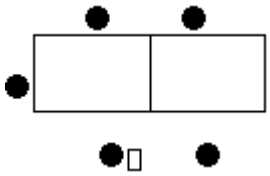
Pairwork

The teacher put on another OHT which had short descriptions and some cue words that were underlined. The children were asked to turn to their partners and discuss how they could improve the choice of adjectives used in the passage. They were to use their dictionary or thesaurus to help them. They were given 2 minutes for the task.

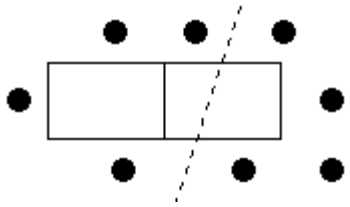
Groupwork (JIGSAW)

The teacher prepared them for the groupwork by reminding the children of the roles they had been assigned in previous lesson. She told the children to form up in groups, as she distributed the materials. The teacher had prepared five short articles on cards on "Inventors and Inventions". She named the inventions and told the children that each one in the group would become an expert on one article. She then explained that those with the same article were to get together to read the same materials. She assigned the expert groups their respective locations. There was brisk movement of children to the expert groups. Each expert group had 8 children clustered around five chairs. The teacher decided this was unsatisfactory and divided the expert groups into subgroups of four:

Home groups of 5 members – 3 students turned their chairs around to face two others.



Expert groups of 8 members. The teacher noted that the groups were overcrowded and modified the arrangement, asking the children to form two-subgroups.



Expert group discussion

Only after the expert group seating was settled did the teacher give further instructions on their task – read the article and do a word study and think of four other words for the underlined ones in the passage. She gave the expert groups five minutes to complete the task and reminded the time-keepers to do their job.

Team Reporting

The teacher gave the cue for pupils to return to their home groups. There was again a buzz of movement as the groups relocate. The teacher had to use the attention signal to gain attention, in order to issue the instructions for team reporting. She reminded the children that each person had 2 minutes to report. During team reporting, it was evident that not all groups proceeded correctly – in most groups, the pupils took turns, but there were a few in which a particular child was more dominant.

Whole-class

To round up the Jigsaw activity, the teacher asked the class to help her complete a matrix table that she had drawn on the whiteboard. This was done not by calling on groups, but with volunteers offering the words.

Pairwork

For the last activity, the teacher distributed a worksheet which was a similar activity: "In pairs you are going to read to your friend in soft voices this passage in the worksheet. I want you to practice your reading. There are 10 underlined words. In pairs, think of another word with the same meaning…" *No group product was created.*

Emergent Issues

- The whole class instruction lasting just under 10 minutes was a rather small part of the whole lesson. The children were to learn through the pairwork and groupwork activities. They could have been asked to present a group product so that learning may be evaluated.
- Crafting good English phrases is a creative activity and cooperation among group members could bring out better ideas. Group competition might also have helped to build team spirit.
- While CL structures and models were used, the teacher emphasised only the elements of task interdependence and individual accountability. The elements that were dropped were techniques to promote positive interaction, such as social skills instruction, group processing and team recognition.
- In conducting a Jigsaw activity in a one-hour lesson, each student was allowed just two minutes of reporting time. Would another structure, e.g., group brainstorming, have been simpler to organise while being able to achieve the same objectives?

Vignette 3

Mrs Song has been a primary school teacher for nineteen years. She was the subject coordinator for Science. An experienced and competent teacher, she seldom used the cooperative learning approach.

A Science Lesson – Phases of the Moon

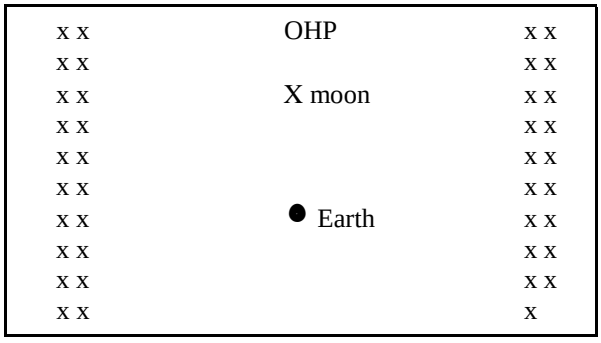
This primary 3 Science lesson on the "Phases of the moon" was part of a unit of work on "The Earth and its Neighbours". The teacher delivered much of the instruction to the whole class, but put in a "task" to be done in groups. The first part of the lesson was conducted in the Music room, where the teacher presented a demonstration. The class then moved to the Science room, where the pupils watched a video presentation and engaged in a groupwork activity.

The lesson pattern was as follows:

Whole-class	Whole-class	Groupwork	Whole-class	Groupwork
Teacher gives a demonstration	Children watch a video	No CL structure is named	Teacher checks understanding	Children do corrections; team cheers
2.35pm →	3.00pm →	3.23pm →	3.30pm →	3.37pm

Whole class (Music Room)

The 39 children were seated on the floor (diagram below). They were to observe a demonstration by the teacher. The teacher numbered the children 1– 6. When she called a number, the children of that number were to sit in two concentric circles around a globe that had been placed at the centre. The children sat in a circular pattern, facing outward. They were to represent the Earth.

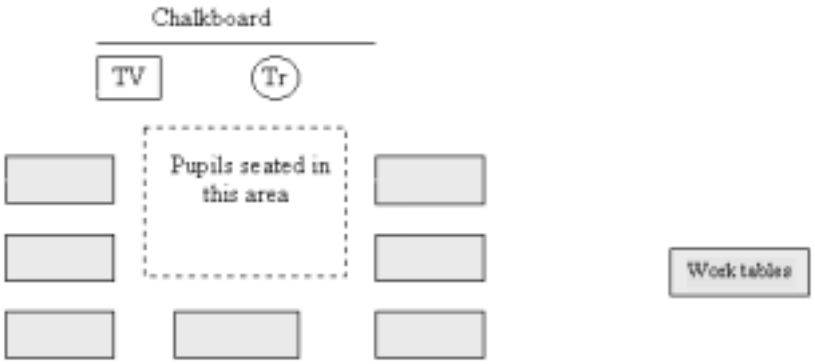


Seating position in the Music Room. The teacher had divided the class into two equal groups. They were seated in pairs on opposite sides, forming two long rows.

The teacher turned off the classroom lights and switched on the OHP. She began to move in a circle around the OHP holding a football in her raised right hand. The children seated in a circle (the Earth) were asked to observe the shape (of the moon) that they could see – "half? full? crescent-shaped?" The teacher completed her circuit with the first batch of ten students. She then repeated the activity for the next ten students, till all forty had a chance to observe the phases of the moon.

When the demonstration was completed, the teacher gave a summary of key points. She then got the children ready to move to the Science Room located at the second storey. The children were told to "line up in pairs" which they did in an orderly way and proceeded quietly to the next venue.

Whole class (Science Room)



Seating position in Science Room during the first 15 minutes until video segment of the lesson was completed.. Six of the seven work tables were used during groupwork.

The children were seated on the floor at the centre. The teacher announced that they would watch a video and record the phases of the moon in their workbook. Her instructions were detailed – "record the shape for night 1, 6, 9…" and she put up illustrations of the shapes as she named them. The children seemed absorbed when the video was played, and were audibly excited to learn that "new moon" is a period when "no moon" is sighted. The teacher cued the children to record their observations for different nights.

Groupwork

In getting the children ready to move to the tables, the teacher first called "number 1" to go to their table. This she did one at a time for the 6 groups. As the children "rushed" to their tables for chairs that were still on top of the tables, there was much noise from the scraping of chairs. It took 5 minutes to settle the group seating arrangements. Two groups were in some confusion as they had more persons than chairs (the teacher sorted out this confusion by reassigning chairs). The teacher then called the number 3 students to collect work materials for their group – coloured paper cut-out in five shapes. She reminded the children that they should refer to their Science text: "find a shape that's similar to what you've recorded through watching the video". As the groups did their work, she walked around to several groups to check their progress. Two groups completed the task quickly. Another group seemed unable to do the task and had to be helped by the teacher. She gave the children more time for the task, encouraging the slower groups to persevere. Whole class

The teacher called the children to return to the centre to give them feedback on the completed task. After calling on a few individuals, she decided to give another demonstration of the phases, this time using two magnetic discs on the board. The children watched as she went through the phases of the moon again: "*What do you see now?*" The correct sequence was then given, and the children were told to check their answers against hers.

Groupwork

The children returned to their tables to rearrange their patterns using the sequence they now knew. This was done quickly by all the groups. The teacher commended one group telling them that they had done well and could "celebrate in your group". The group members reached out with much glee, giving each other high-fives. Other groups were celebrating in the same way.

Emergent Issues

- Moving into groups created excitement and some confusion. The teacher was a skilful classroom manager during whole-class teaching, but the skill does not automatically transfer to a groupwork situation.
- 6-7 students seem too many for effective cooperative groupwork. Such large groups increases the problems of free-riding and off-task behaviour, as well as simple tasks of moving into groups and turn-taking.
- Having learnt that different shapes of the moon are seen on different nights, could the groupwork task have been more challenging? The children could have been asked to discuss "why" the different shapes are seen.
- Giving children the correct answer is a practice that has been taken for granted by many teachers and pupils. Were these children getting the signal that at the end of it all, the correct answer will be the one given by the teacher?

Discussion

The 3 vignettes uncover some interesting features of how classrooms are organised and instructions carried out in our primary classrooms. The three illustrations represent what we thought were interesting practices, with each vignette showing a different style of groupwork, which the teacher has shaped according to her personality, experience using groupwork, the class, and subject topic.

The first vignette captures a teacher with good conceptual understanding of cooperative learning. The understanding was evident in two main ways – the CL structures were well selected and used appropriately; the key elements of cooperative learning were present in the lesson. In the post-observation conversation, the teacher confirmed that she believed firmly in groupwork and had been working on improving her CL techniques. To the pupils, groupwork was such a normal class activity that they understood its forms and rules. What was particularly striking was the disciplined use of groupwork. A skilful classroom manager, the teacher exercised firm management of the groupwork activities. For example, when she wanted the children to work in pairs or groups, the instructions were precise and the work was monitored. The lesson pace was brisk and transitions between activities quick. The learning tasks were designed to provoke thinking. Few teachers displayed this pattern of use in our observations of lessons incorporating groupwork. In fact, only three teachers in the 70 classrooms that we observed

The second vignette is a more typical pattern of groupwork in the six schools that were included in the study. The classroom organisation pattern here follows a whole-class instruction – pairwork-groupwork sequence. The Jigsaw activity is however more complex. It is more common for the teacher to use one or two simpler CL structures such as turn-to-your-neighbour and think-pair-share during a lesson. We found that similar CL structures were being used in most classrooms. There was also uniformity in the classroom management techniques (e.g., the attention signal and types of roles assigned).

The vignette of the third teacher shows that a competent teacher may not find cooperative learning quite the best form for her lesson objectives. The groupwork activity in the lesson was not planned as a major part of the lesson but was included because that part of the lesson was conducted in the science room where pupils are required to seat in clusters than individually. The teacher in this case was not trained in CL and consequently, the groupwork did not reflect the elements of cooperative learning. What requires attention for improvement was the groupwork task. The task that was designed did not require cooperation or group effort even though it lent itself to CL.

Antil et al (1998) observed that teachers, through experience, often work out "more realistic" forms of cooperative learning. While CL models are well designed in theory, they include so many elements that complete implementation is difficult. The teachers may shorten the steps in the cooperative learning structure and drop some elements. In the lesson with the Jigsaw activity described in Vignette 2, the phases of teach, expert group discussion and team reporting were used, but testing and team recognition phases were not included.

Our teachers place a strong emphasis on academic learning than the social learning goal and this shows in how they are using cooperative learning. Cooperative learning has been received by the teachers because of the active engagement and pupil dialogue it promotes. However, the school system in Singapore remains examination-oriented and the competitive culture is pervasive. Thus, few of the teachers seem as committed to the interpersonal learning goals of cooperative learning. Groupwork is seen primarily as a way of getting the children to collaborate on some academic tasks and to provide them the opportunity to be more actively involved in parts of the lesson.

It is therefore not a surprise that the elements of social skills instruction and group processing were often dropped. In only one of the three cases represented did the teacher tell the children to practice "speaking politely" and "praising their partners". The teachers however used the technique of assigning group roles. The purpose was to facilitate group functioning (time-keeper, resource captain) and few of the teachers spent time talking to pupils about the responsibilities that came with the roles. There was little attention to group processing.

Cooperative learning has been linked to deeper task engagement. But this would happen only through carefully designed groupwork tasks. Johnson views positive interdependence as the critical element in cooperative groupwork. Positive interdependence requires the structuring of the task to guarantee that group members feel that they have to cooperate. This may be built in through goal, reward, role and resource interdependence. However, the prospect for a greater shift towards designing group-oriented tasks would depend on the existing assessment procedures and criteria being used for judging pupils'academic and social learning. Assessment modes in most subjects are still through individual exams. Few teachers employ groupwork as an opportunity to get the children to cooperate in producing a group product to be presented to the class or handed in for checking.

Finally, whether personal adaptations of cooperative learning qualify as the real thing depends on the presence of certain critical features that "transform groupwork arrangements into authentic cooperative learning." (Antil et al, 1998, p. 433) These would have to include conditions that promote positive interdependence, individual accountability, promotive interaction, group processing and the development of small-group skills (Johnson and Johnson, 1991). Clearly, teachers must be adequately equipped with the necessary skills and theoretical understanding of CL before they can be expected to implement the range of CL elements in their groupwork activities.

Implications for Staff Development

How can teachers be better trained for the implementation of CL in classrooms? Researchers and advocates of CL have begun to appreciate the complexity of implementing CL as it requires teachers to acquire new skills, behaviour, beliefs and understanding of the philosophy of cooperative groupwork. With the rare exception of some teachers who are highly motivated to experiment with CL on their own, most teachers would need more support besides training to get started.

Johnson and Johnson (1998) have advocated that staff development programmes for CL should aim at establishing a cooperative culture within the school, where teachers working in collegial teaching teams engage in discussions about cooperative learning, co-plan cooperative lessons and solve implementation problems in order to continuously improve the quality of their use of cooperative learning. It would also mean that school administrators must be prepared to make changes in the way teachers' classroom work is scheduled to allow them to observe each others' CL lessons and jointly deal with implementation problems.

The prevailing work culture in schools poses a problem, as noted by Wehlege, Smith and Lipman (1992, p. 76). Most teachers are accustomed to working as individuals in separate classrooms and have little or no experience within the school of cooperating with others on group projects. Simply providing time for them to meet is not a guarantee that teachers would know how to work together in ways that are likely to result in more engaging curriculum and improved student performance. Teachers must have a conceptual grasp of cooperative learning principles and understand "what cooperation is" before learning "how it works" (Johnson and Johnson, 1998). Learning how to implement an instructional innovation would be easier when teachers understand the nature of CL.

Similarly, teachers and pupils must have a shared understanding of what CL is intended for in their classroom learning experience. All too often, pupils are left out of the preparatory phase in the introduction of CL for subject work. In training teachers for CL, staff developers will have to emphasise how teachers can best explore the meaning of CL strategies with their pupils. But it is not enough for the teacher to explain what CL is about as old modes of understanding groupwork will interfere with the change process. Rudduck (1986, p. 112) has suggested the usefulness of showing pupils video tapes of the innovation at work in other schools in order to give them a concrete representation of the form of groupwork apart from oral explanations.

There is no short cut to the way teachers learn how to implement CL in their classrooms. The process is likely to be incremental as they experiment with CL elements and make adaptations to suit the work context and pupils. There must be a high tolerance for faltering implementation at the initial stage of using CL techniques.

Teachers who work in teams can serve as critical friends to provide feedback on the quality of learning, how to design productive groupwork tasks and improve on the skills of group processing.

References

Antil, L.R., Jenkins, J.R., Wayne, S.K. and Vadasy, P.F. (1998). Cooperative learning: Prevalence, conceptualizations, and the relation between research and practice. *American Educational Research Journal, 35*(3), 419-454.

Chew, J., Ng, M, D'Rozario, V. and Lee, C. (1997*). Primary teachers' classroom practices in Singapore: preliminary findings*. Paper presented at the 1997 Educational Research Conference, Singapore, 24-26 November 1997.

Johnson, D. and Johnson, R. (1998). Effective staff development in cooperative learning: Training, transfer and long-term use. In Brody, C.M. and Davidson, N. (Eds) *Professional Development for Cooperative Learning – Issues and Approaches*. Albany: State University of New York Press.

Johnson, D.W. and Johnson, R.T. (1991). *Learning together and alone: Cooperative, competitive and individualistic learning* (3rd edition). Boston: Allyn & Bacon.

Lee, C., Chew, J, Ng, M. and Tey, S.H. (1999). *Teachers' use of cooperative learning in their classrooms: case studies of four elementary school teachers.* Paper presented at the Annual Meeting of the American Educational Research Association. 19-23 April 1999, Montreal, Canada.

Putnam, J.W. (1993). The process of cooperative learning. In Putnam, J.W. (Ed) *Cooperative Learning and Strategies for Inclusion*. Baltimore: Paul H Brookes Publishing Co.

Rudduck, J. (1986). Curriculum change: management or meaning? *School Organisation, 6*(1), 107-114.

Rich, Y. (1990). Ideological impediments to instructional innovation: The case of cooperative learning. *Teacher and Teacher Education, 6*(1), 81-91

Singapore: Ministry of Education (1998). *The Desired Outcomes Education*.

Singapore: Ministry of Education (1999). *Developing Thinking Schools: A Strategic Perspective on Education for the 21st Century.* (A planning document for the Ministry of Education FY 1999 to FY 2003).

Spillane, J.P. and Zeuli, J.S. (1999). Reform and Teaching: Exploring patterns in the context of national and state mathematics reforms. *Educational Evaluation and Policy Analysis, 21*(1), 1-27.

Stenhouse, L. (1975). *An Introduction to Curriculum Research and Development.* London: Heinemann.

VanSickle, R.L. (1992). Cooperative learning properly implemented works: Evidence from research in classrooms. In Stahl, R.J. and VanSickle, R.L. (Ed) *Cooperative Learning in the Social Studies Classroom – An Introduction to Social Study.* Washington DC: NCSS.

Wehlage, G., Smith, G. and Lipman, P. (1992). Restructuring urban high schools: The New Futures Experience. *American Educational Research Journal, 29*(1), 51-93.