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ABSTRACT

This paper is a report of a year-long school-based study in Singapore that investigated the effects of the use of cooperative learning in elementary social studies classrooms on social studies achievement, attitude towards the subject, and classroom climate. Results indicated that lower ability pupils benefited the most from the use of cooperative learning in social studies lessons. These students had better social studies test scores than the control class and did just as well as the high ability pupils on the recall items of the test. Attitude towards the subject in the experimental classes did not decline over the school year, but attitude towards the subject in the control classes declined significantly. There were no significant differences between experimental and control classes in classroom climate. Results have provided some evidence to support the use of cooperative learning in Singapore schools. Contains 7 tables of data, 18 citations of research studies of cooperative learning in social studies, and 21 references. (BT)

A School-Based Study of Cooperative Learning and Its Effects on Social Studies Achievement, Attitude towards the Subject and Classroom Climate in Four Social Studies Classrooms.

By Christine Kim-Eng Lee, Maureen Ng, & Rosalind Phang

A school-based study of cooperative learning and its effects on social studies achievement, attitude towards the subject and classroom climate in four social studies classrooms

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Abstract

This paper reports a year long school-based study which investigates the effects of the use of cooperative learning in four primary five social studies classrooms on social studies achievement, attitude towards the subject and classroom climate. Results of the study indicate that lower ability pupils benefited the most from the use of cooperative learning in social studies lessons. They did better in their social studies test scores compared to the control class and just as well as the high ability pupils on the recall items of the test. Attitude towards the subject in the experimental classes did not decline over the year but attitude towards the subject in the control classes decline significantly over the school year. There were no significant differences between experimental and control classes in classroom climate. The results of this study have provided some evidence to support the use of cooperative learning in Singapore schools.

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A school-based study of cooperative learning and its effects on social studies achievement, attitudes towards the subject and classroom climate in four social studies classrooms

INTRODUCTION

The impetus for research in the use of cooperative learning arises from a growing awareness of the need to change the prevailing classroom practices in primary social studies classrooms in Singapore. Informal discussions with school administrators and teachers in the course of our work as teacher educators suggest that the dominant teaching method in use is a teacher-directed one, with a heavy dependence on textbooks. An earlier study by Chen (1985) of teachers' perceptions of the primary four Social Studies curriculum materials revealed teaching-learning activities were more teacher-directed and less pupil-centred. The responses showed the predominance of two or three teaching-learning activities in the classroom. Many of the respondents indicated that for most lessons, they taught facts to pupils, explained concepts and difficult words in the text and asked pupils questions about what they had been taught. Such a classroom situation is not unique to Singapore. Even in the United States where social studies holds relatively greater importance compared to our schools, social studies has been criticised as a subject that is being "taught poorly" (NCSS, 1989).

The teaching of social studies however, need not be highly didactic. The nature of the subject of social studies lends itself to active forms of learning such as student inquiry, role-play, discussions, and project work. The social studies instructional package developed by the Curriculum Development Institute of Singapore attempted to move teachers from a teacher-centred approach to a more interactive form of teaching. In the revised instructional package, cooperative learning strategies were suggested as supplementary form of classroom organisation.

What is cooperative learning? In a cooperative learning environment, pupils work in small groups of two to six to achieve a common goal. These groups are structured heterogenously, usually in terms of academic ability, sex and race. There are numerous cooperative learning strategies available to teachers, each with its different set of instructional procedures. Both Student Teams Achievement Division (STAD) and Team Games Tournament (TGT) emphasise group rewards to motivate students to cooperate (Slavin, 1980). JIGSAW uses expert group discussion (Aronson, 1978). The "Learning Together" framework focuses on interactive social processes (Johnson & Johnson, 1975). Group Investigation encourages peer collaboration in inquiry (Sharan & Sharan, 1976). Many variations of these and other cooperative learning strategies are being developed and incorporated in teaching manuals and instructional materials (Slavin, 1992 and Kagan, 1992). Among these strategies, the work of Spencer Kagan and his structural approach to cooperative learning is particularly influential in Singapore schools.

A substantial amount of research on cooperative learning has been conducted in North America and Israel. The research findings suggest that the use of cooperative learning in classrooms bring about positive effects on cognitive and affective learning. Several research reviews and meta-analyses (Bossert, 1988-89; Johnson, Maruyama, Johnson, Nelson & Skon, 1981; Johnson, Johnson & Maruyama, 1983; Sharan, 1980; Slavin, 1980) concur on the positive impact of cooperative learning on academic achievement. Cooperative learning studies have also reported positive effects on a wide range of affective outcomes. These include inter-group relations (Wiegal, Wiser & Cook, 1975; Slavin, 1985); self-esteem (Johnson, Johnson & Scott, 1975; Sharan, 1980); classroom climate (DeVries et.al, 1974):; school, and subject-matter (Devries, Edwards & Wells, 1974; Johnson, Johnson, Johnson & Anderson, 1976).

As a social learning model, cooperative learning has the clear goal of enhancing social relationships, motivation and attitudes, in addition to academic achievement. The research findings on affective outcomes have not been as consistent as the achievement effect. Following a comprehensive review, Slavin (1992) concluded that although not all studies found positive effects on each non-cognitive outcome, the overall effects of cooperative learning on self-esteem, inter-group relations, liking of class and classmates and other variables are "positive and robust".

In Singapore, no study has investigated the use of cooperative learning in social studies classrooms. Such research is timely, for cooperative learning is recommended for use in Singapore classrooms, with the revised social studies curriculum materials (CDIS, 1994). The National Institute of Education, Singapore, has also begun systematic training of social studies teachers in cooperative learning in both its pre-service and in-service programmes. Much of the research on cooperative learning has been conducted in a non-Asian context. In our work of training teachers in teaching methodology, we have met with some skepticism among the teachers regarding the use of cooperative learning in our schools. They were doubtful that cooperative learning would work as well in the Singapore school culture. There was also reluctance among some teachers to change to a classroom organization that is so different, and which seemed to de-emphasize competition and individual merit.

Hence, a study was conducted in a primary school in Singapore. The aim was to determine whether the use of cooperative learning could produce the positive effects reported by various researchers elsewhere. In particular, it investigates whether the use of cooperative learning in social studies classrooms can bring about positive effects in social studies achievement, attitude towards the subject and classroom climate.

REVIEW OF LITERATURE

Tables 1 and 2 provide a summary of cooperative learning studies in which social studies was the subject matter. This review is limited to studies that investigate the use of Jigsaw and the Learning Together models in elementary classrooms. It does not include studies that investigate other forms of cooperative learning such as TGT, Group Investigation or STAD. In each study, the effects of cooperative learning were compared to a control group that was taught by a different approach, namely whole class instruction, competitive or individualistic learning.

Table 1: Studies which investigate the use of Jigsaw in elementary social studies classrooms

Research Article	***Treatment***	***Dependent Variables***	***Research Findings***
1. Lucker, Rosenfield, Sikes, & Aronson, (1976) Grade: 5th and 6th; n = 303	Jigsaw vs. traditional Time: 2 wks daily for 45 mins.	• academic achievement	+ significant gains for minority group pupils but *not for white children*
2. Blaney, Stephan, Rosenfield, Aronson, & Sikes (1977) Grade: 5th grade n = 304	Jigsaw vs. traditional Time: 6 weeks	• self-esteem • attitudes towards peers	+ students in Jigsaw groups manifested higher self-esteem and liked group-mates more
3. Bridgeman (1981) Grade: 5th n = 120	Jigsaw vs control Time: 8 weeks	• role-taking ability	+ positive effects
4. Little (1986) Grade: 3rd n = 75	Jigsaw with one of 4 advance organisers (summaries, outlines, key terms and Qs.).	• social studies achievement • self-concept	+ positive effects on social studies achievement. + use of outlines and questions had positive effects on self-concept

Table 2: Studies which investigate the use of "Learning Together Model" in elementary social studies classrooms

Research Article	***Treatment***	***Dependent Variables***	***Research Findings***
5. Wheeler & Ryan (1973) Grade: 5th & 6th n = 88	Coop. vs. competitive vs. control Time: 18 days	• academic achievement • attitude towards social studies • attitude towards cooperation	+ *no significant difference between competitive and cooperative groups on achievement* + significant difference in attitude towards social studies and cooperation
6 Ryan & Wheeler (1977) Grade: 5th & 6th n = 60	Coop. vs. competitive Time: 18 days	• behaviour during play of a simulation game	+ coop. subjects more than competitive. Subjects manifested cooperative behaviours
7. Kniep & Grossman (1979)	Coop. vs. competitive	• achievement (high level understanding)	+ competitive condition produced greater high-level understanding

8. Johnson, & Johnson (1981) Grade = 4th n = 51	Coop groups of non-handicapped & handicapped vs. individualistic instruction Time: 45 mins for 16 days	• cross-handicap interactions • cross-handicap attraction • attitude scales measuring cohesian & peer support among others	+ coop. learning promoted more frequent cross-handicap interaction and more interpersonal interaction during class and free time
9. Johnson & Johnson (1981) Grade: 4th n = 51	Cooperative vs. individualistic Time: 55 mins for 16 days	• cross-ethnic interaction • cross-ethnic helping • inter-ethnic interaction during free time	+ cooperative learning promoted more cross-ethnic interaction in both instructional and free-time activities
10. Smith, Johnson & Johnson (1981) Grade = 6th n = 84	Controversy in learning groups vs. concurrence seeking in learning groups vs. individualistic study. Time: 65 mins. daily for 2 weeks	• ss achievement and retention • information-seeking behaviour • attitudes toward ss • attitude towards peers • attitude towards controversy • perspective-taking • cognitive rehearsal	+ controversy promoted higher achievement and retention, greater search for information, more cognitive rehearsal, continuing motivation and positive attitudes toward controversy and classmates. + students in the coop cond. perceived their class to be more cohesive & having more peer encouragement for learning
11. Smith, Johnson & Johnson (1982) Grade = 6th n = 55	Coop. vs. individual Time: 5 days	• **achievement** • retention	+ students in coop. groups achieved and retained significantly more.
12. Johnson, Johnson, Tiffany, & Zaidman (1983) Grade = 4th n = 48	Coop. vs. individualistic Time: 55 mins for 15 days	• achievement • cross-ethnic interaction • cross-ethnic interpersonal attraction	+ CL promoted higher achievement for minority students, more cross-ethnic interaction and greater cross-ethnic interpersonal attraction
13. Johnson & Johnson (1984) Grade: 4th n = 48	Cooperative vs. individual Time: 55 mins. for 15 days	• achievement • interpersonal attraction between handicapped and non-handicapped	+ higher achievement + greater interpersonal attraction
14. Johnson, Johnson, Tiffany & Zaidman (1984) Grade: 4th n = 51	Inter-group coop. vs. inter-group comp. on Time: 55 mins. for 10 days	• cross-ethnic relationships	+ inter-group cooperation promoted more inclusion of minority students and more cross-ethnic relationships

15. Warring, Johnson, Maruyama & Johnson (1985) Grade: 6th n = 74 Grade: 4th n = 51	Coop. controversy vs. Coop. debate vs. individual Time: 55 mins, for 11 days 6th grade and for 10 days for 4th grade	• cross-ethnic relationships • cross-sex relationships	+ inter-group cooperation promoted more positive cross-sex and cross-ethnic relationships than inter-group competition
16. Yager, Johnson & Johnson (1985) Grade: 2nd Geography n = 75	Coop. (structured vs. unstructured discussion vs. individualistic) Time 36 mins,18days	• daily achievement • post-instructional achievement • retention	+ positive significant effects. Greater gains for cooperative groups with structured oral discussion
17. Yager, Johnson, Johnson & Snider (1986) Grade: 3rd n = 84	Cooperative vs. Individualistic Time 35 min, 25 days	• daily achievement • post-instructional achievement • retention	+ positive effects
18. Lampe & Rooze (1994) Grade: 4th n = 131	Learning Together Model Time: 12 weeks	• achievement • self-esteem	+ higher achievement favouring cooperative learning + higher self-esteem for males regardless of treatment

The majority of the studies surveyed showed positive outcomes for the effects of cooperative learning. The reported cognitive and affective benefits are the results of studies largely conducted in classrooms over relatively short time frames. This could have given rise to a halo effect in the cooperative learning classes where implementation was short-term. Their findings present questions of generalisability to actual school contexts. This points to the need for more research to be conducted in real classrooms over a longer time. The study reported in this paper investigates the use of cooperative learning in four social studies classrooms over a school year.

RESEARCH QUESTIONS

The following questions were addressed:

1. Do the pupils from the cooperative learning classes perform better in the social studies achievement test than pupils in the control classes?;
2. Do pupils in the cooperative learning classes have more positive perceptions of classroom climate and attitude towards social studies than pupils in the control classes?; and
3. In what ways do the effects of cooperative learning differ for pupils from the different streams (EM1, EM2 and EM3)[2]?

[2] In Singapore, children are streamed at the end of Primary 4 (10 year olds). They are streamed into EM1 (English and Mother-Tongue as first language); EM2 (English and Mother-Tongue as second lnaguage); and EM3 (English and Mother-Tongue at a basic level).

METHOD

The school and subjects

The study was conducted in a Catholic girls' primary school located in a public housing estate in Singapore. The choice of the school was determined partly by the openness and receptivity of the school principal to such a project in the school. The experimental school was a large school, with eight Primary 5 classes and an ethnically mixed student population (79% Chinese; 13% Indian; 6% others; 2% Malay). Four Primary 5 teachers were assigned by the principal to participate in this project. Their classes were used as the experimental classes - one EM1 class, two EM2 classes and one EM2/3 class.

Another Catholic girls' primary school was used as the control school. A different school was chosen to reduce the problem of contamination that could occur had the control classes been from the experimental school. This control school was a good match to the experimental school in terms of school mission and academic standards. The control school was also located near a public housing estate but was a smaller school with only four Primary 5 classes - one EM1 class, two EM2 classes and one EM2/3 class.

Pupils in Singapore are streamed according to their academic ability and proficiency in two languages, English Language and Mother Tongue at the end of Primary 4 into EM1, EM2 and EM3 streams. The streaming examination is school-based using standardised items from a centralised item bank from the Ministry of Education. In some schools, EM3 pupils are not sufficient in number to make up a class and these pupils are placed in the same class with lower end EM2 pupils. This was the case for the experimental and control schools which participated in this study. Generally, it is assumed that the EM1 class represents students of above average academic ability, EM2 of average ability and EM3 of below average ability.

Treatment

Social studies was taught for three periods lasting one and a half hours each week in both schools. The same syllabus and social studies text materials were used, being common for all primary schools in Singapore. Both schools followed a similar scheme of work, teaching the sequence of topics prescribed by the syllabus.

The following steps were taken in the experimental classes:

- All four teachers received some training in cooperative learning. The amount of training varied among the four teachers. Additional coaching was available to teachers who needed more help;
- Unit plans and lesson plans were designed by the researchers and discussed with the experimental teachers;
- The teachers were briefed with respect to the cooperative learning activities in the lesson plans. Several meetings with experimental

teachers were held throughout the period of implementation to ensure that they understood the lesson plans adequately enough to implement them with their pupils;

- The classes were organized into heterogeneous small groups for social studies lessons. The group size was four pupils. Each group was of mixed ability and ethnicity. The teachers were encouraged to change membership of the groups at the end of each term;
- The pupils were taught social skills in the first four weeks. These skills included using quiet voices (speaking softly), taking turns, giving praise and encouraging others;
- The pupils were assigned roles within their groups, such as Quiet Captain, Resource Manager and Recorder. The roles were rotated among group members;
- The cooperative learning strategies that were used included Turn to Your Neighbour, Listen-Think-Pair-Share, Numbered Heads Together, Sequential Roundtable, Send-A-Problem and Jigsaw;
- Three social studies units were used for the cooperative learning lessons - "Knowing our Singapore"; "We need Water" and "We need Food";
- The teachers were encouraged to incorporate group processing, though this was left as an optional feature.

The observers observed a lesson each term over the school year. These classroom observations ascertained that the teachers were indeed using cooperative learning in their teaching.

The teachers in the control school received no training in cooperative learning and taught social studies through mainly whole-class direct instruction. This was ascertained through interviews with groups of control school pupils, taken randomly from the four control classes.

Dependent Measures

Social Studies Achievement

The social studies achievement test was administered at the end of the study. It was a 20 multiple-choice test, designed by the researchers to ensure that the test items covered standard social studies content that would have been taught in both the experimental and control schools. There were 11 items testing knowledge and 9 items testing pupils' analytical ability and application. The test was vetted by two independent examiners. They reached 85% agreement in classifying the test items into recall and higher-order thinking items. The test items were scored right (one mark) or wrong (zero). A computer programme, ITEMAN was used to analyse the test items. The reliability of the test as measured by the alpha coefficient (the index of internal consistency) was 0.69.

Classroom Climate

Classroom climate was measured using My Class Inventory (MCI) (Fraser, 1982). The MCI is a simplified form of the Learning Environment Inventory

targeted at elementary grade pupils. It is a shorter instrument and the language has been made simpler. The MCI has 5 sub-scales:

- Satisfaction (MCI 1) measures the enjoyment of class;
- Friction (MCI 2) measures aggressive behaviour between pupils in the class;
- Competition (MCI 3) measures how important it is to the pupils of attaining achievement relative to their classmates;
- Difficulty (MCI 4) measures pupils' perception of the difficulty of the class work; and
- Cohesiveness (MCI 5) measures friendly relationships among pupils of the class.

The reliability estimates for each of the MCI sub-scales have been determined in an extensive Australian study involving 2305 seventh-grade pupils (Fraser & Fisher, 1983). The alpha coefficients ranged from 0.62 to 0.78. A pilot test of the MCI had been carried out earlier in another Singapore school. The MCI sub-scales had alpha coefficients ranging from 0.60 to 0.72 (n = 266).

Attitude towards Social Studies

The Attitude towards Social Studies questionnaire was designed by adapting the Science Attitude questionnaire (Schools Council Publications, 1970) to social studies. The questionnaire has a list of 25 positive and negative statements. For each statement, the student had to indicate his/her agreement or disagreement on a 4-point Likert scale. The statements relate to four sub-scales:

- Perception of importance of social studies;
- Liking for social studies;
- Attitude towards the teacher; and
- Attitude towards groupwork

Both the My Class Inventory and Attitude toward Social Studies questionnaire were administered at the beginning and at the end of the study.

RESULTS

Social Studies Achievement

Table 3 reports the means and standard deviations of the achievement scores of the experimental classes and control classes. Comparisons of the achievement scores on the post-test were made between classes of comparable streams: EM1, EM2 and EM2/3. It was assumed that the streaming process at the end of Primary 4 provided some measure of comparability between the experimental and control classes of the Primary 5 cohort.

Table 3: Means and standard deviation of achievement scores in social studies

Stream	Experimental Classes			Control Classes			t-test	p-value
	Mean	S. D.	n	Mean	S.D.	n		
Total Score								
EM1	76.75	12.43	40	77.21	11.36	34	- 0.166	0.434
EM2	70.44	15.67	79	65.07	14.48	75	2.212	0.014*
EM2/EM3	68.67	17.66	30	55.14	18.13	35	3.039	0.002*
Recall Items								
EM1	71.57	16.49		73.24	14.15		- 0.468	0.321
EM2	69.26	15.96		63.62	16.15		2.177	0.016*
EM2/EM3	72.11	21.21		54.28	19.39		3.604	0.000*
Higher-order Items								
EM1	83.07	12.58		82.04	14.20		0.328	0.372
EM2	71.89	19.72		66.83	18.86		1.624	0.053
EM2/3	64.46	20.31		56.20	22.87		1.542	0.064

Note: p values provided according to 3 decimal places.

* significant at 0.05 level

A t-test for the difference in means was used to analyse the achievement test scores. There were no statistically significant differences in the total achievement scores between the EM1 experimental and control classes. This finding was the same for both the recall items and the higher-order items in the test. However, the EM2 experimental classes and the EM2/EM3 class did significantly better (at 0.05 significance level) than the control classes on the social studies test as a whole and on the recall items in the test. Like the EM1 pupils, there were no statistically significant differences on the higher-order thinking items of the test.

In comparing the mean scores of the low ability pupils from the EM2/3 class to the high ability pupils (EM1 class) and the average ability pupils (EM2 classes), the low ability pupils in the experimental group did better than expected, particularly on the recall items of the test. The low ability pupils had a mean score of 72.11 compared to the high ability pupils with the mean score of 71.57.

Classroom Climate

Tables 4 and 5 report the means and standard deviations of each of the experimental and control classes on the 5 sub-scales of the My Class

Inventory. The five sub-scales are satisfaction, friction, competition, difficulty and cohesiveness. The researchers had expected the pupils in the experimental classes to demonstrate greater satisfaction, become more cohesive and perceive school work to be less difficult with the use of cooperative learning. It was also hoped that a lower level of friction and competition would be found in the experimental classes.

A non-parametric test, the Wilcoxon-Signed Rank Test, was used to test if there was any significant difference between the pre-test and post-test of the experimental and control classes. A non-parametric test was used as the data failed the assumption of normality. There was no significant differences between pre- and post-test scores in either the experimental or control classes. The use of cooperative learning did not bring about any improvement in classroom climate as expected.

Table 4: Means and standard deviations of the pre-test and post-test scores on the My Class Inventory of four experimental classes

Class	Pre-Test Mean	S. D.	Post-Test Mean	S.D.
Class:EM1	(n=39)		(n=40)	
Satisfaction*	25.44	3.33	23.75	4.34
Friction	11.49	3.00	15.60	2.45
Competition	13.92	3.11	15.85	2.97
Difficulty	11.10	2.89	10.50	2.93
Cohesion*	15.26	2.53	12.35	2.90
Class: EM2A	(n=38)		(n=40)	
Satisfaction*	23.89	3.44	21.73	5.29
Friction	13.84	3.85	16.05	3.25
Competition	15.63	3.26	15.53	3.74
Difficulty	10.79	2.66	11.08	2.58
Cohesion*	14.58	3.01	12.48	3.75
Class: EM2B	(n=37)		(n=39)	
Satisfaction*	22.89	4.11	21.41	4.95
Friction	13.73	3.24	16.36	2.38
Competition	14.57	3.49	14.79	3.30
Difficulty	13.03	2.98	11.69	2.99
Cohesion*	14.35	3.23	12.00	3.15
Class: EM2/3	(n=30)		(n=30)	
Satisfaction*	20.37	4.67	18.87	5.38
Friction	14.60	3.41	19.27	3.26
Competition	14.73	2.96	16.20	2.76
Difficulty	12.40	3.34	14.20	2.99
Cohesion*	12.77	3.25	10.63	2.81

Note: Sub-scales with asterisk * were expected to increase. Sub-scales wthout the asterisk were expected to decrease.

Table 5: Means and standard deviations of the pre-test and post-test scores on the My Class Inventory of four control classes

Classes	Pre-Test Mean	S. D.	Post-Test Mean	S.D.
Class: EM1	(n=35)		(n=36)	
Satisfaction*	26.77	1.06	25.89	2.05
Friction	11.08	3.19	12.56	3.57
Competition	12.89	3.66	13.83	3.46
Difficulty	10.57	2.36	11.78	2.82
Cohesion*	14.46	3.07	14.61	2.86
Class: EM2A	(n=35)		(n=38)	
Satisfaction*	23.46	3.57	22.58	4.70
Friction	13.03	3.19	15.97	2.53
Competition	15.31	3.06	15.26	3.05
Difficulty	11.91	2.64	11.95	2.5
Cohesion*	13.06	3.60	11.74	3.55
Class: EM2B	(n=37)		(n=39)	
Satisfaction*	25.38	2.66	23.15	4.14
Friction	13.14	3.42	15.23	3.39
Competition	12.68	3.82	13.62	3.49
Difficulty	11.51	3.21	12.13	3.63
Cohesion*	13.68	4.01	12.51	3.66
Class: EM2/3	(n=36)		(n=36)	
Satisfaction*	24.47	3.34	21.44	5.50
Friction	14.17	3.22	14.83	4.42
Competition	14.11	3.15	14.00	3.37
Difficulty	12.92	2.05	13.33	3.55
Cohesion*	12.08	4.03	12.19	4.03

Note: Sub-scales with asterisk * were expected to increase. Sub-scales wthout the asterisk were expected to decrease.

Pupils' Attitude towards Social Studies

Tables 6 and 7 show the means and standard deviations for each class on the Attitude towards Social Studies questionnaire. The research hypothesis was that pupils' attitude towards social studies would improve after cooperative learning experiences. The Wilcoxon-Signed Ranks Test was also used to test for significance of difference between the pre- and post-test scores of the experimental and control classes, on each sub-scale of the attitude inventory. Like the MCI data, the data on the sub-scales of the Attitude questionnaire did not meet the assumption of normality. The 4 sub-scales were Importance of Social Studies, Liking for Social Studies, Liking for the Teacher and Liking for Groupwork.

In the four experimental classes, there were no significant differences between the pre-test and post-test scores of the pupils' attitudes towards the subject. The mean scores on Liking for Social Studies remained relatively constant in the experimental classes, except in one EM2 class. In this class, the mean score on liking for social studies declined significantly ($H = 1.8224$, $p = 0.034$).

In the four control classes, there was a decline in the pupils' attitude towards the subject. The mean scores of the EM1 class fell from 69.74 to 62.50; EM2A class from 76.6 to 76.0; EM2B class from 70.95 to 67.67; and EM2/3 class from 71.03 to 53.44. The decline was statistically significant for the EM1 control class ($H = 3.033$, $p = 0.002$) and EM2/3 control class ($H = 7.429$, $p = 0.001$). The academically able pupils and the academically weaker pupils in the control classes showed a poorer attitude towards social studies towards the end of the year.

In the control classes, the pupils' Liking for Social Studies declined in all the four classes. The decline was statistically significant for three classes - EM1 class ($H = 4.0412$, $p = 0.000$), EM2B class ($H = 3.4440$, $p = 0.0142$), and EM2/3 class ($H = 4.3752$, $p = 0.000$). The sharpest decline in Liking for Social Studies occurred in the EM1 and EM2/3 control classes.

On the Importance of Social Studies, there was a statistically significant decline in the EM1 control class ($H = 3.2405$, $p = 0.001$). This could be an indication that the EM1 pupils had rated the importance of their school subjects in relation to the examination requirements. These pupils seem to have acquired an attitude of prioritising their subjects, placing English, Mathematics and Science as more important than Social Studies.

Table 6: Means and standard deviations of the pre-test and post-test scores on the Attitude towards Social Studies questionnaire of four experimental classes

Class	Pre-Test		Post-Test		H-score	p-value
	Mean	S. D.	Mean	S.D.		
Class: EM1	(n=39)		(n=40)			
Importance of SS	31.67	4.46	32.18	4.80	-0.3938	0.347
Liking for SS	12.18	2.50	13.03	2.71	-1.3250	0.093
Liking for Teacher	18.03	1.87	18.15	2.18	-0.2759	0.391
Liking for Groupwork	17.15	2.16	16.30	3.76	0.7360	0.231
Total Score	77.26	7.91	78.15	9.04	0.4660	0.641
Class: EM2A	(n=38)		(n=40)			
Importance of SS	31.29	5.12	31.33	5.98	-0.8252	0.205
Liking for SS	12.24	3.29	12.38	2.99	-0.5492	0.291
Liking for Teacher	18.32	2.03	17.98	2.69	-0.3601	0.359
Liking for Groupwork	16.53	3.59	15.98	4.13	0.2835	0.388
Total Score	76.32	10.93	76.05	12.06	0.1040	0.980
Class: EM2B	(n=37)		(n=39)			
Importance of SS	28.27	5.00	29.05	4.46	-0.7283	0.233
Liking for SS	12.22	1.87	11.13	2.72	1.82241*	0.034
Liking for Teacher	16.73	3.11	16.92	2.91	-0.4831	0.315
Liking for Groupwork	16.14	2.43	15.69	3.83	0.5065	0.306
Total Score	72.11	8.66	71.90	9.83	0.0990	0.921
Class: EM2/3	(n=30)		(n=30)			
Importance of SS	31.23	4.92	31.57	4.84	-0.1711	0.432
Liking for SS	12.33	2.67	13.37	2.16	-1.5851	0.057
Liking for Teacher	18.13	1.89	18.37	2.22	-0.810	0.209
Liking for Groupwork	17.20	3.56	17.70	2.94	-0.7872	0.216
Total Score	76.40	9.13	79.80	8.98	1.454	0.146

* significant at 0.05 level

Table 7: Means and standard deviations of the pre-test and post-test scores on the Attitude towards Social Studies questionnaire of four control classes

Classes	Pre-Test		Post-Test		H-value	p-value
	Mean	S. D.	Mean	S.D.		
Class: EM1	(n=35)		(n=36)			
Importance of SS	30.00	4.12	27.22	5.03	3.2405 *	0.001
Liking for SS	10.40	2.75	8.17	2.58	4.0412 *	0.000
Liking for Teacher	15.54	3.74	11.31	3.66	4.7382 *	0.000
Liking for Groupwork	15.14	3.12	17.08	3.02	-3.1132 *	0.001
Total Score	69.74	9.53	62.50	10.57	0.033*	0.002
Class: EM2A	(n=35)		(n=38)			
Importance of SS	31.89	3.49	32.07	4.00	-0.2816	0.390
Liking for SS	12.72	2.33	12.21	2.64	0.9713	0.166
Liking for Teacher	17.69	2.55	18.63	1.81	-2.191 *	0.014
Liking for Groupwork	16.23	2.73	15.26	3.44	1.8543 *	0.032
Total Score	76.60	7.44	76.00	9.48	0.302	0.763
Class: EM2B	(n=37)		(n=39)			
Importance of SS	28.51	5.33	28.31	5.78	0.2954	0.384
Liking for SS	11.73	2.81	10.18	2.68	3.2543*	0.001
Liking for Teacher	16.95	2.97	14.87	3.84	3.4440*	0.001
Liking for Groupwork	15.62	3.56	15.41	3.68	0.1377	0.445
Total Score	70.95	10.57	67.67	12.23	1.253	0.210
Class: EM2/3	(n=36)		(n=36)			
Importance of SS	30.69	4.12	23.00	5.18	0.4614	0.322
Liking for SS	10.97	2.41	7.44	2.64	4.3752*	0.000
Liking for Teacher	14.86	3.83	8.88	3.29	4.8151*	0.000
Liking for Groupwork	15.77	3.01	14.83	3.78	0.9769	0.164
Total Score	71.03	9.71	53.44	10.37	7.4290*	0.000

* significant at .05 level.

DISCUSSION

This study showed that the experimental pupils in the EM2 and EM2/3 classes did better than the control pupils in the social studies achievement test as a whole and in particular the recall items of the test. The lower ability pupils in the EM2/3 when compared to the higher ability pupils in the EM1 class performed just as well as on the recall test items, with a mean of 72.11 compared to 71.89 achieved by the EM1 pupils. The lower ability pupils in the EM2/3 stream benefited from cooperative interaction with their peers.

The social studies achievement test results showed that cooperative learning had a positive effect on the academically weaker pupils in the school. Cooperative learning provided opportunities for team learning and discussion of ideas. This enhanced motivation and peer support could have helped the academically weaker pupils to remember social studies facts and concepts better. The researchers' classroom observations and the teachers' reports confirmed that there was a high level of active learning, pupil engagement and interest during social studies lessons in the experimental classes. Through such lessons, pupil motivation was enhanced and learning effectiveness was improved.

The expected gains in the classroom climate of the experimental classes did not occur. This finding is consistent with other school-based studies conducted in Israel (Sharan et. al., 1984). These studies found that there is a tendency for classroom climate to remain the same or to decline over time. According to Slavin (1990), one problem lies in how classroom climate is reported by pupils. Most pupils, especially primary children, tend to respond too positively in the pre-test. This seemed to have occurred in the pre-test data. For example, out of a maximum possible score of 27 for the satisfaction sub-scale of the classroom climate instrument, the mean pre-test scores for the experimental classes ranged from 20.37 to 25.44 and for the control classes, they ranged from 23.46 to 26.77. Hence, the post-test scores cannot discriminate effectively from the high base.

It is also possible that the use of heterogeneous groups may bring out undercurrents or differences between group members. It is not always easy for people of different abilities and background to work together closely. While efforts were made in this project to incorporate the teaching of social and collaborative skills, our experience shows that such skills are not easy to develop. Interviews with the pupils have also shown that there were some groups that encountered difficulties working cooperatively. There is also a culture of competition that pervades the school system. Even in the experimental classes, the pupils spent much of their time engaged in competitive and individualistic learning. Our pupils do not have much opportunity to work in groups during other lessons.

The use of cooperative learning had a positive but slight effect on the experimental pupils' perception of the importance of the social studies and liking for the subject. In sharp contrast, the liking for the subject declined in the control classes. This decline was statistically significant. In the EM1

control class, pupils' perception of the importance of the subject also showed a significant decline towards the end of the year. This may indicate that the academically able pupils in the EM1 classes generally do not consider social studies to be as important as the other examinable subjects in the Primary School Leaving Examination. This perception, however, did not occur among the EM1 pupils of the experimental class.

A survey of pupils' views towards the use of cooperative learning helps to explain the slight improvement in the experimental pupils' attitude towards the subject. The EM2/3 class particularly showed greater improvement compared to the rest. Almost 80% of the experimental pupils said that they liked the cooperative groupwork in their social studies lessons, 82% would like their teacher to continue using cooperative groupwork next year and 70.7% said they would like their teacher to use cooperative groupwork in other subjects in addition to social studies. The use of cooperative groupwork in social studies lessons seemed to have generated greater interest in the subject and the pupils were engaged more actively. However, the improvement in pupils' attitude towards the subject was not as strong as expected. Perhaps this was because social studies lessons occupied only one and the half-hours a week and it is a subject which is non-examinable at PSLE and often considered unimportant.

CONCLUSION

The research findings provide some evidence to support the use of cooperative learning in primary classrooms in Singapore, particularly with lower ability children. Lower ability pupils in the EM2/3 class benefited the most from cooperative learning experiences in their social studies lessons. The research evidence is particularly relevant given the emphasis in our schools on pupils' academic achievement.

The affective outcomes of cooperative learning were not as clear. This may have been because classroom climate and attitude towards the subject are more difficult to measure in a natural classroom setting than in controlled environments. The pupils had begun with strong positive feelings towards their classes and it was unrealistic to expect greater improvement in classroom climate given the short period of implementation. There was some improvement in pupils' attitudes towards the subject in the experimental classes though the change was not statistically significant. This study was conducted in a natural school setting and this could have placed some constraints on its implementation. The effects observed in the experimental classes were nonetheless a sharp contrast to the control classes. .Among the control pupils, there was a significant decline in pupils' attitudes towards social studies.

The effects of cooperative learning in this study have been limited by its use in only one curriculum area. Cooperative learning should be extended to the teaching of other curriculum areas in our primary classrooms. The children in this study expressed enthusiasm for the use of the cooperative learning

approach. This should spur teachers to include cooperative learning in their repertoire of instructional methods.

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