



## Cooperative Learning (CL) and Academic Achievement of

### Asian Students: A True Story

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#### Abstract

This paper reviews research examining the effects of CL strategies on the academic achievement of Asian students. Fourteen studies are included in the review. Sample characteristics, measures, findings, and effects are reported in a table. Achievement outcomes are found mixed with 50 per cent of the studies reporting neutral and negative findings and 50 per cent reporting positive findings. The paper also reveals mismatches between CL's principles and Asian cultures based on what was reported in the reviewed studies. Future research needs to further investigate this issue. Also, for CL to work more effectively in the Asian context, there needs to be some further research that investigates how to change those principles of CL that may be inappropriate in the Asian context so they may be more compatible with Asian culture and conditions.

**Keywords:** Cooperative learning, Mismatches, Values, Principles, Strategies

#### 1. Introduction

Entering the 21<sup>st</sup> century, under the impact of global forces, all nations are facing a range of political, social, economic, technological and educational changes. With the growth in science and technology, it is widely accepted that the world is increasingly becoming 'small'. Actions in one part of the world exert powerful influences on other parts of the world. There is more engagement of communities and individuals throughout the world. Now individuals are required to depend on each others and think with others if they want to obtain any success. The ability to work together cooperatively has become one of the skills which enable people to survive in the global workforce (Foyle & Shafto, 1995). Therefore, teaching students how to communicate effectively, cooperate with others and engage in self-learning has become the basics of education (Cheng, 2003b). Consequently, many Asian countries have been recently put under pressures to carry out a series of educational reforms. The focuses of these reforms show that Western teaching and learning approaches such as student-centred learning, team work, and especially CL have become priorities in Asian education institutions. The increasing adoption of such approaches comes from a belief among Asian educational authorities that borrowing modern (Western) philosophies and practices would mean taking advantage of the forerunners, making a huge leap by skipping the painfully long research stage (Walker & Dimmock, 2000).

However, so-called global imports have led to a situation in which many Western teaching and learning principles do not suit the local context in terms of both cultural values and infrastructure conditions, leading to rejections from different levels. In the case of CL, although this approach has been demonstrated to be able to equip students with the essential elements for work places of today and the future (Adams & Hamm, 1990; Johnson et al., 1994), it consists of many principles and values which completely contrast with those in Asian countries. Consequently, when experimenting CL in Asian classes, many researchers have found that besides those studies which reported that CL can improve Asian students' academic performance, there was still a number of studies which found that CL was not better,

even worse, than the traditional lecture-based teaching method in terms of increasing students' academic achievement. Therefore, in reality, some Asian educational institutions have decided to return to their traditional teaching methods.

Such inconsistent findings, to some extent, have brought about uncertain feelings for Asian educators to continue their innovations. Therefore, it would be worthwhile to conduct an analysis that examines the percentage of those studies that reported positive effects of CL on the academic outcomes of Asian students and the percentage of those studies that reported negative effects of CL. Such an analysis will provide insights into the effectiveness of CL in the Asian context. The purpose of this paper is to review research addressing the effects of CL on the academic achievement of Asian students. More importantly, the paper attempts to investigate the mismatches between CL philosophies and Asian cultural values. This will help Asian educators and future researchers to take cautious steps when applying this radical approach to the local educational settings.

## 2. Methods

### 2.1 Inclusion and exclusion criteria

This paper reviews all available published and unpublished studies of CL methods that met the following criteria:

(1) The study measured the effects of CL on the academic achievement of Asian students at all schooling levels from primary to college. This criterion excluded a large number of studies which investigated the effects of CL on the academic achievement of Western students. Also, the criterion excluded some studies which measured other effects of CL rather than academic achievement such as one study by Hing et al. (1999) which measured behaviours and perceptions of students toward CL, one study by Ng and Lee (1999) which examined the effects of CL on the cross-ethnic friendship, and one study by Lee, C. and Others (1997) which investigated the effects of CL on promoting thinking.

(2) The study must be designed as a true experimental or quasi-experimental study in which a CL method was compared with a control group that could be considered initially equivalent (because of random assignment or matching plus analysis of covariance), or appropriate single-subject designs were used (Hersen & Barlow, 1976). This requirement excluded those CL studies that failed to use control groups. For example, the review did not review one study by Chan (2004) because this study did not compare the effects of CL and the control group, but compared the effects of CL under different conditions. Also, the review excluded three studies by Wan (1996), Lee, Soo-Im. (1999) and Jacobs (1997) because they were not experimental or quasi-experimental in design.

(3) The study was conducted in an actual classroom or programmatic setting for at least two weeks. This excluded those studies of CL interventions that investigated the effects of CL on distance education (e.g., Lee, Yi-hui, 2006), and those studies that were considered laboratory studies in field settings or under more controlled laboratory conditions rather than true field experiments because of their brief durations.

(4) The study included CL as an intervention or intervention component. Studies that focused on peer-mediated instructional strategies and group learning other than CL, such as small group learning, group activities, and peer-tutoring were not included because the author considered the interactive structures of these strategies to be qualitatively different from those characterizing CL. For example, group learning typically just required students to seat together to accomplish an assignment cooperatively, and peer-mediated strategies typically employ a more accomplished or older student to instruct another student. Such a strategy is different from CL which requires the instructor and students to follow specific principles. For example, the review excluded one study by Ismail and Alexander (2005) because it used peer - tutoring approach, one study by Cue (2006) because the treatment method was learner - centred approach, and three studies by Speece (2002), Tam (2001) and Csete et al. (1998) because they applied only group work.

### 2.2 Documents reviewed

The studies included in this study were identified through a thorough search for relevant published and unpublished studies. The authors explored multiple electronic databases, including Educational Resources Information Centre (ERIC), Psychological Abstracts (PA), Dissertation Abstracts International (DAI), the Social Sciences Citation Index (SSCI), examined relevant bibliographies, searched reference sections of the studies included in this study to identify further relevant studies, and contacted relevant researchers and organizations. 2.3 Results

Eventually, the authors selected 14 studies which met the criteria for inclusion. Table 1 presents these studies in the order of the conduction year. This table includes study characteristics such as names of researchers, sample size, school level, location, treatment methods, duration, subject areas and achievement effects.

The achievement results of the 14 studies are presented in the last column of Table 1. A + sign indicates that positive achievement effect was found, meaning that the CL group scored higher than the control group on a test of content to which both were exposed. Zero signifies no differences, and a - sign indicates that a control group significantly exceeded an experimental group in achievement.

Results presented in Table 1 show that CL has brought about mixed achievement outcomes to college students, including negative, neutral and positive ones. Noticeably, the results reported that among 14 studies reviewed above, there are 7 studies (50%) reporting neutral and negative results. This ratio challenged a very common conclusion of Johnson, Johnson and Stanne (2000) and many other researchers (e.g., McMaster & Fuchs, 2002; Slavin, 1983; Ravenscroft et al., 1995) that CL efforts result in higher individual achievement than do competitive or individualistic efforts. As such, the effectiveness of CL seems very questionable in the Asian context. This leads to a question of why CL failed to improve the academic achievement of Asian students. The following section attempts to provide some explanations.

### 3. Why did CL fail in the Asian context? Some views from the reviewed studies

It is really hard to find a study whose findings are completely reliable. Almost all studies hold some weaknesses in terms of design and implementation process leading to some biases. And all studies reviewed in this study are similar. Each study may have some aspects which were not implemented correctly, so causing some unreliable findings. Investigating remaining weaknesses to better inform future research and practice is necessary. However, it would be beyond the scope of this paper to cover this issue roundly. Within this paper, the authors only attempt to examine if mismatches between the principles of CL and Asian cultural values play any role in the unsuccessful CL implementation in the reviewed studies.

Taken together, the authors identified an interesting point that all those studies which reported neutral and negative outcomes (seven studies in Table 1) commented that mismatches between principles of CL and Asian cultures were one of the main causes of the CL failure. For example, in their study, Tan et al. (2007) explained that the failure of their group investigation experiment was related to the relevant features or characteristics of the students. The students were accustomed to learning passively from teachers, taking notes, and preparing for tests and examinations. They were not accustomed to investigating a topic, acquiring information by themselves or from their peers, or learning in groups. Therefore, they wanted teachers to present the academic material to them instead of being asked to search for information. The students also encountered difficulty researching topics because previously they did not have to conduct research, but only recorded the material that teachers presented (prepackaged knowledge) (*Such passive learning culture completely conflicts with one of the main CL principles which emphasizes that students must be active and independent in their learning. What students find can bring teachers' knowledge into question*). Besides, students in Tan et al.'s study also commented that group investigation required more of their time than did traditional whole-class instruction, so they had insufficient time to study for their other class tests and to revise for the forthcoming examinations. As a result, although most of the earlier studies on group investigation (Lazarowitz & Karsenty, 1990; Shachar & Sharan, 1994; Sharan & Hertz-Lazarowitz, 1980; Sharan & Shachar, 1988; Sharan & Shaulov, 1990; Sharan et al., 1985) yielded significant differences between the two methods of classroom instructions, Tan et al.'s group investigation study failed to work with Singaporean students.

Lee, Ng and Phang (1999) reported that their study was not well conducted because of two main difficulties. First, the instructors did not support the study wholeheartedly because they were doubtful that CL would work as well in the Singapore school culture. There was also reluctance among some teachers to change to a classroom organization that was so different, and which seemed to de-emphasize competition and individual merit. Second, student groups did not work effectively because the participants had a strong culture of competition. Even in the team work, team members spent much of their time engaged in competitive and individualistic learning (*What was reported in this study proves that Asian students are not interested in the notion of 'sink or swim together'. This means that the interdependent component, one of the five essential elements of CL, would be hardly implemented properly in the Asian context*).

Struggling with another problem, Sachs et al. (2006) explained that most teachers in their study could not complete cooperative tasks properly because they needed to spend a large proportion of time setting up and explaining the task procedures. Teachers explained that this time was necessary because if they did not instruct students in detail, students would be unable to complete the tasks (*This is completely different with CL's principles as CL requires teachers to provide a low amount of formal structure, an ill-structured task and a synthesis skill. As such, Asian teaching and learning practice is a big challenge of what CL requires: teachers should move from the position as the 'sage on the stage' to one as a 'guide on the side'*). Moreover, Sachs et al. also complained that his participants often felt anxious when sharing points of view in groups (*This limits the effectiveness of CL remarkably because group discussion is an essential procedures of all CL strategies*).

Having the same problem related to group discussion, participants in both studies of Eva (2003) and Chung (1999) reported that they were uncomfortable with the arguments and conflicts in groups. Therefore, they were unwilling to participate fully and honestly in the group discussion. This led to ineffective group discussion because almost every group member ended up with his/her own decision (*Such culture of 'survive in harmony' does not suit one of the five CL essential conditions, namely 'Face-to-Face Promotive Interaction' because this condition requires cooperative students to challenge each other's conclusion and reasoning, then come to the best answer*).

Slightly different, Messier (2003) did not have any problem with his students but he claimed that a significant effect on academic achievement of his participants was that teachers encouraged memorization and put less value on students, cooperatively learning, working in groups and asking questions from group settings. Therefore, they did not encourage students to do much group discussion (*This is against one of the most important instructions of CL that teachers need to encourage students to work in team to develop their critical and creative ideas*).

Finally, even for those studies which reported positive outcomes (seven studies in Table 1), some of them also found that there were a lot of barriers related to mismatches between CL philosophies and the participants' culture. For example, Hassim et al. (2004) reported that one of the biggest problems in his study was the existence of students who had strong 'individualism culture', so they refused to cooperate hence their groups became dysfunctional. This point is very similar to what Sugie (1999) argued about Japanese students' culture. Sugie claimed that one may say that collectivism is one of the characteristics of Japanese culture, but at the same time there are data that indicate that children are quite competitive. Therefore, the main issue which many recent Japanese educational reforms need to address is how to unite students together. Unfortunately, Sugie also reported that no educational reforms, so far, have solved this problem successfully. For example, she revealed that the aim of the 1989 curriculum renovation of implementing cooperation among students is not practical enough to be brought to the classroom because the underlying problems arising from the competitive educational culture remain.

Similar to the case of Missier's study (2003), Zakaria and Iksan (2007) found that among many other challenges of implementing CL in Asian countries, Asian teachers' perceptions toward teaching and learning are a big barrier. They specified that the culture of "Do not trust students in acquiring knowledge by themselves" of Malay teachers was a big challenge for CL. Malay teachers think that they must tell their students what and how to learn. Only the teachers have the knowledge and expertise (*This is opposite to a preference of CL which allows students to investigate individually then share their investigation within a group. To this point, their knowledge is even higher than their teacher's*).

#### 4. Conclusion

Although we attempted to be systematic and thorough in our search and selection procedures, it was occasionally difficult to determine where a CL study had been implemented. Therefore, this study may have excluded a study that did involve the investigation of CL on the academic performance of Asian students. Before we can fully understand whether CL is an effective strategy for improving the academic achievement of Asian students, a greater number of larger and longer-running field-based experiments must be conducted. Based on what has been found in this study, the authors can only attempt to issue a warning that many classroom teachers have embraced CL as a preferred instructional strategy. However, in the light of inconclusive findings in the literature regarding the efficacy of using CL with Asian students, teachers may wish to be cautious about mismatches between CL's principles and Asian cultures.

With the best efforts, we have revealed some of such mismatches reported in the reviewed studies. These findings add more information to a previous study conducted by Phuong-Mai et al. (2006). The difference between the findings of this study and Phuong-Mai et al.'s is that while what Phuong-Mai et al. discussion was just based on theoretical literature, the findings in this study were taken from real experimental research, thus they, to some extent, sound more reliable. Moreover, these findings explored some points which were not discussed in Phuong-Mai et al.'s study.

Our aim of revealing these mismatches was to help Asian CL instructors to notice which principles of CL are not appropriate in their classes so that they can avoid or do necessary modifications. However, taken together all what has been found in this study and in Phuong-Mai et al.'s study, these findings seem still very narrow. There need to be more research investigating more mismatches. More importantly, there need to some research looking for how to modify inappropriate principles of CL toward a way which suites teaching and learning philosophies of Asian teachers and students and also can be done under infrastructure conditions of Asian countries. Once such research is conducted, it would provide Asian teachers with valuable instructions to implement CL in their classes. Also research examining the effects of CL on other outcomes of Asian students, such as CL's impact on the behaviours and attitudes of Asian students toward CL strategies, toward learning subjects, retention, peer relationship also needs to be conducted. Data from such investigations will enable us to better quantify, synthesize, and interpret CL's effects on Asian students.

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Table 1. CL studies and academic performance of Asian students

Researchers/Y ear	Location	N	School Level	Treatment Methods	Duration	Subject Area	Achievement Effects
Sachs et al., 2003	Hong Kong	520	Primary	Project team	1 year	English	-
Chung, 1999	Hong Kong	23	College	Mixed	1 semester	Math	-
Lee, C.K., Chew, J., Ng, M., Hing, T.S., 1999	Singapore	4 teachers	Primary	Mixed	1 year	Social Subjects	+ (teachers reported)
Lee, C.K., Ng, M. & Phang, R., 1999	Singapore	286 (3 classes)	Primary	Jigsaw and others	1 year	Social Studies	0 (1 class) + (2 classes)
Betty, 2000	Hong Kong	Not reported	Primary	STAD	1 semester	Not reported	+
Eva, 2003	Hong Kong	21	Secondary	Mixed methods	2 terms	English	0
Messier, 2003	China	145	Secondary	Mixed	4 weeks	English	-
Hassim et al., 2004	Malaysia	128	College	Mixed	1 semester	Industrial Engineering	+
Law, 2005	China	Not reported	Primary	STAD	1 term	Social Sciences	-
Hwang et al., 2005	Hong Kong	122	College	Group Investigation	1 semester	Accounting	+
Chang, 2006	Taiwan	Not reported	Primary	STAD	10 weeks	Visual Arts Curriculum	+
Cheng, 2006	Taiwan	98	College	Group Investigation	8 weeks	Technology	+
Liao, 2006	Taiwan	84	Not reported	Mixed	12 weeks	English	+
Tan et al., 2007	Singapore	241	Secondary	Group Investigation	1 semester	Geography	0

### Notes

In the column of achievement effects: 0 indicate no differences; + indicates a positive achievement; - indicates that a control group significantly exceeded an experimental group in achievement.

(1) In the column of treatment methods: Mixed indicates the researchers taught an experimental group by CL techniques, but did not follow any specific CL strategy.

(2) Findings of the study by Lee, C. K., Chew, J., Ng, M., Hing, T. S., (1999) were obtained from reports of those teachers who implemented CL in their classes.