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Perceptions of Low Ability Students on Group Project Work and Cooperative Learning

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The benefits of cooperative learning strategies, such as group project work, have been advocated in a wide range of educational contexts. There is however, scant information on the outcome of such programs on students of low academic ability. In this study, interviews were conducted with four groups of low-ability students, with the aim of investigating their perceptions on the effectiveness of group project work in promoting their social and cognitive skills. Our findings show that although the students recognized that the program improved their competence in interacting with others, there are problematic organizational and instructional issues that have to be ironed out before students can profit fully from cooperative learning programs.

Key words: Cooperative learning, group work, project work, low ability students, teamwork, Singapore education, communication, social development

Introduction

Since the late 1930s when Kurt Lewin and his co-workers began their pioneering investigation on the impact of group work on children's behavior and performance, the benefits of cooperative learning strategies have often been extolled by researchers in a wide range of contexts. Johnson and Johnson (1989) defined cooperation as "working together to accomplish shared goals", and further as "the use of small groups so that individuals work together to maximize their own and each other's productivity and achievement" (p. 2). Slavin (1996) echoed this view when he states "the fact that their outcomes are dependent on one another's behavior is enough to motivate students to engage in behaviors which help the group to be rewarded." From a motivational perspective, Johnson and Johnson (1989) summed up the findings of a plethora of experimental and correlational studies with the conclusion that cooperative efforts lead to improved social interaction and psychological health, and enhance productivity and achievement to a greater extent than competition or individualism.

Researchers have also investigated the relationship between achievement in cooperative situations and the abilities of the test subjects. Yager, Johnson and Johnson (1985) and Gabbert, Johnson and Johnson (1986) provided evidence that high, medium and low achievers all derived benefit from taking part in cooperative learning groups comprising members of mixed ability. In support of the view that cooperative learning promotes social cohesion, Johnson and Johnson further suggested that cooperation enables members in a team to experience the beneficial effects of 'positive interdependence' and 'promotive interaction', which include providing constructive feedback to one another; recognizing the importance of effort and encouraging its

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input towards goal attainment; promoting interpersonal trust within the group; reducing the level of anxiety and stress associated with the task and motivating one another towards achieving common goals. Cohen (1986) upheld this position by adding that students perceive group work as a rewarding activity when they have been sufficiently inducted in group process skills and when given an interesting and challenging task to accomplish. More recently, researchers have advocated the effectiveness of managing classes as groups and promoted the cross-curricular use of group concepts (Killacky & Hulse-Killacky, 2004).

In view of the many reports on the positive effects of cooperative learning, it is not surprising that this strategy is at times touted as a panacea for all ills. Thus, Slavin (1991, p.71) reported that cooperative learning has been regarded as the solution to 'an astonishing array of educational problems' and Burron, James and Ambrosio (1993) and Ossont (1993) consider it as a way to promote students' academic and social skills.

In Asian educational systems, research on cooperative learning has led to similar conclusions being drawn on the beneficial effects of learning in groups. In Hong Kong, Chiu (2004) found that cooperative learning, coupled with appropriate guidance and intervention from teachers, can indeed increase students' engagement and problem solving abilities. Chang (2004) found that Singaporean students at junior college (post-secondary), secondary and primary levels agreed that there are a number of very valuable benefits to be gained from engaging in group project work, namely in promoting teamwork and co-operation. The context of Singapore provides an interesting framework for further investigation, since cooperative learning and project work are carried out extensively in schools but there is inadequate research on their effectiveness, especially in improving the motivation and performance of the lower ability students. In order to give the reader a better idea of the Singapore context, which provides the basis for the current study, an overview of the education system in Singapore is outlined in the next section.

The Singaporean Education System

In the years following Singapore's move towards self-government in the late 1960s, the initial objective of the education system was to provide basic education for all, in view of producing a trained workforce for the industrializing state. In the early 1980s, more attention was given to questions regarding the finer purpose and intrinsic value of education in Singapore. Thus, reforms were brought about in the areas of organizational structure, curriculum and management within the education system, the most radical of which was the introduction of the process of streaming students on the basis of their abilities as they progress from primary to secondary and subsequently, pre-university levels. The issue of streaming was the target of much argument and debate. On the one hand, there were those who advocated its benefits, first, in enabling students in the lower ability group to learn at a slower and more comfortable pace than the more capable ones and secondly, in channeling the students more effectively into their areas of interest and ability. Conversely, those opposed to the idea felt that the streaming procedure would result in marginalizing those who were less academically inclined, rather than helping them.

In spite of its controversial start, ability-based streaming system was implemented in the early 1980s and has since evolved into the current education system. In the current system, a primary school pupil goes through the first streaming exercise at the end of the initial foundation stage of four years. Based on his/her performance, the child is then placed in one of two language streams, with the more able students being given the option to study the Mother Tongue either at first or second language level. The weaker students are channeled into a course in which they are taught a simplified curriculum.

At the end of primary schooling, pupils sit for the Primary School Leaving Examination (PSLE). Based on their results, they are then placed in four different secondary school streams which are as follows: the Special, Express, Normal (Academic) and Normal (Technical) courses. The Special course is offered to the top 10% of the PSLE cohort to allow the more academically able students to study both English and the Mother Tongue at first language level as well as an additional foreign language. The rest of the students who have done well in the PSLE are channeled into the Express stream whereby they offer English at first language level and the Mother Tongue as a second language. Students from both the Special and Express streams complete their secondary schooling in four years, at the end of which they sit for the GCE 'O' level examinations. Students who do not reach the required standard for the Express stream are channeled into the Normal stream, an extended course whereby at the end of four years' schooling, the students sit for a basic 'N' level exam instead of the GCE 'O' levels. Those who achieve good grades are then allowed to continue schooling for another two years, after which they sit for the

GCE 'O' levels. Recently, more flexibility has been introduced into the system due to the emphasis towards ability-driven education. As such, students in the Normal stream have been given the opportunity to transfer across courses or to take up subjects at more advanced levels even before their final year.

After their secondary school studies, students are then offered several options based on their GCE 'O' level results. The top 25 to 30% of those who pass their O levels, qualify for entrance to the two-year course in the Junior Colleges, while the rest of the students are offered courses in the polytechnics, institutes of technical education (ITE) and the Centralised Institution. While both the Junior Colleges and the Centralised Institution prepare their students for the GCE 'A' level exams, the courses offered by the latter caters for the weaker students who take their 'A' levels at the end of three years instead of two as in the case of the Junior Colleges.

The polytechnics and ITE offer courses with a stronger emphasis on applied and technical fields, as compared to the more academic approach in the Junior Colleges. Whereas the majority of the students enrolling into the polytechnics would have graduated from O levels, most of those joining the ITE would come from the Normal stream.

Purpose of the Study

Generally, the positive responses to cooperative learning strategies were gleaned primarily from controlled studies carried out by the investigators and their co-workers, with instructions and guidance explicitly and systematically given to the participating students. There are, nonetheless, few studies that have looked at the situation in authentic school settings, whereby the effectiveness of implementing cooperative strategies, such as group project work, is often hampered by the multitude of constraints faced by teachers and students in their daily classroom routine.

Despite the widespread use of cooperative learning and the substantial literature published on its effectiveness, there are many contentious issues that warrant further investigations. In Slavin's (1996) words, problems that remain unresolved lie in "the great deal of confusion and disagreement about why cooperative learning methods affect achievement and, even more importantly, under what conditions cooperative learning a number of factors hindering progress amongst group members. Whereas most researchers found cooperative learning strategies to be beneficial to students irrespective of their academic abilities, some have reported that the gain is higher for high ability students than for their low ability peers. Conversely, other workers have maintained that the improvement is more pronounced for the low ability group. Furthermore, despite the promising views purported by the researchers regarding cooperative learning programs, educators have in recent years, become increasingly concerned with the persistent lack of overall improvement in the academic performance, behavior and morale of low ability students. There is, therefore, a pressing need to re-examine the effectiveness of cooperative learning strategies for low ability subjects, and even more importantly, to find out from those very students their degree of receptiveness to such programs.

The research described here was carried out in the educational context of Singapore, where there has recently been a new emphasis placed upon a re-alignment of the curriculum to cater more effectively to the needs of students of low academic ability. The aim of the current study is to investigate the perceptions of a sample of low ability secondary school students on group project work, a commonly used form of cooperative learning.

Our research questions were as follows:

1 What are the difficulties and/or problems encountered by low ability students when carrying out project work?
2 What do low ability students perceive as the benefits (if any) that can be gleaned from working together on a project?
3 To what extent are low-ability students predisposed towards project work as a learning strategy?

Method

Participants

The subjects interviewed in the course of this study were 17 students, 11 girls and 6 boys, aged 13 – 14 years, who came from two different secondary schools in Singapore. They were in their second year of secondary education, with 9 of them pursuing the Normal Academic course and the rest of them taking the Normal Technical course. Since they were all in the Normal stream, they were considered to be of lower academic ability compared to their peers in the Express or Special stream. All of the participants have had prior experience of conducting project work, with most of them having carried out at least two such projects before.

Project Work Implementation in Singapore Schools

In Singapore, the Project Work (PW) initiative was one of the programs introduced in schools to nurture critical and creative thinking, inquiry-based and cooperative learning and communication skills. It is thus a fairly common practice for teachers to conduct group project work with their pupils and most students would have experienced working in group projects by the time they graduate from secondary school. At post-secondary level, project work is a compulsory subject for all A-level students, and serves as a criterion for university admission.

The usual procedure involves allocating students to groups comprising 5 to 6 members each, assigning a project task or theme to each group and setting a time-line for the preliminary planning, development and conclusion of the project. Although, in general, students are initiated to the four stages of project work, namely planning, researching, production (report writing and/or product design and synthesis) and finally communicating (making an oral presentation), there is a wide diversity in the approaches undertaken by schools and teachers in the implementation of the program. This divergence arises mainly in the instructional framework, and due to the logistics and resources made available to the students by their schools and teachers. For instance, whereas some schools stick to the conventional approach whereby the teachers themselves oversee the management and implementation of the program, others prefer to enlist the services of external agents who would then run the instructional program for the students.

Generally, however, most schools have established PW frameworks that incorporate some, if not all, of the essential components of cooperative learning, namely positive interdependence, promotive interaction, individual and group accountability, social skills and group processing (Johnson, Johnson, & Holubec, 2002). To foster positive interdependence, the students are instructed to take up specific duties within their groups and as such, each team member has the opportunity to make a unique contribution towards the success of his/her group. This also ensures that each individual member is accountable for his/her precise role within the group. In addition, group effort towards task completion is promoted as members learn to work together to achieve group goals. As the groups progress through the various stages of their projects, they are closely monitored by their supervising teachers, whose duties include helping the students to resolve conflicts within the groups, as well as encouraging members to support and motivate one another. Promotive interaction and interpersonal skills are thus enhanced. Finally, group processing is achieved by encouraging students to reflect and evaluate their own progress at both the personal and group levels through the use of reflective logs, journals and feedback forms. Supervising teachers are also tasked with providing feedback and guidance to their students throughout the duration of their projects.

Project Work Assessment

At secondary school level, the assessment format used for PW tends to vary from one school to another. Generally however, the focus of assessment is on four areas: (1) application of knowledge; (2) collaboration; (3) communication and (4) independent learning. The students are graded as a group for application of knowledge and communication, on an individual basis for independent learning, and both individually and as a group for collaboration. Grades are awarded based on the extent to which the group members are able to meet a given set of criteria for each of the four assessment areas. Thus, a student's final grade is computed based on a combination of his/her individual and group grades.

Interviews

In this study, an ethnographic approach was adopted to capture and describe the views of low ability students, gleaned from semi-structured interviews on the various aspects of project work. Such interviews were carried out with four groups, each consisting of about 3 to 5 students from the two participating schools. Due to time-table constraints, the interviews were carried out after school hours. The narratives were audio-recorded and transcribed for future analysis. In addition to the students' verbal responses, the interviewer was also given instructions to record any non-verbal behaviors or cues that would contribute to providing a full picture of the specific microenvironment within which interview results were obtained.

In general, the following questions provided the framework for the interviews:

1 What are the positive ("good things") and negative ("bad things") aspects of project work in general?
2 What are the concerns or problems encountered during each of the four stages of project work? The interviewer recalled each individual stage of project

work (e.g. planning) and elicited responses from the students.

3 What have the students learned in the process of carrying out project work?

4 How do the students rate the importance of project work?

5 What improvements could be made to the implementation of project work?

Analysis

The review of the interview transcripts was carried out using a combination of categorical and stage-structure analysis (Gillham, 2005). The transcripts were first carefully examined to identify recurrent substantive statements, from which were derived the main categories for the responses to each question. Recurring statements across the different groups were then recorded as sub-categories and their occurrence tallied on a spreadsheet to identify the students' common views and perceptions. Responses were then compared and contrasted across the groups. In addition, comments that were specific to individual groups were also taken into consideration if they contributed towards a better understanding of the relevant group dynamics occurring in the course of project work.

To enhance the reliability of the interpretation of the results, an independent researcher was enlisted as an 'auditor' to carry out a parallel appraisal of the categorical framework and randomly selected samples of the transcripts. Close agreement ($PA > 0.70$) was obtained between the outcome of the author's analysis and that of the auditor, indicating that the interpretation and coding of the interview data was reliable and unbiased.

Finally, the interview findings were further evaluated in relation to the observations made by the researchers during their visits to the schools. Due consideration was given to the possible causal relationship between the differences in perception of the students and the various ways in which group project work is implemented in the schools.

Results

In reporting the research findings, the four groups interviewed are denoted as groups A, B, C and D, with groups A and B being from the Normal (academic) stream and groups C and D from the Normal (technical) stream.

Groups A and C were from the first of the two selected schools, whereas groups B and D belonged to the second school.

The views of the students on the various aspects of group project work are outlined below. Where appropriate, exact quotations from audiotape transcripts were included to enhance the understanding of the contextual issues arising from the implementation of project work for students of low academic ability. In the excerpts included here, the actual names of the interviewees have been replaced by pseudonyms.

General views on group project work

Three (groups A, B and C) out of the four groups interviewed had negative views on group project work and described it in such terms as 'very boring', 'very hard', 'very troublesome'. One of the respondents from group A was of the opinion that PW was not important and not necessary since 'it's not counted as a criterion for promotion'.

On the other hand, members of group D gave generally positive views such as 'I like to do PW (project work)' and gave reasons such as being able to create or produce something, the chance to 'meet friends and have fun' and 'we do projects, then we can get to know each other more.'

Project planning

The main issues articulated by the students were related to the degree of autonomy they had for decision making. All four groups reported that they were given a common theme for their project. However, only the students in groups A and D had the leeway to decide on their own project title. For the two other groups, the students were asked to choose one out of a number of project titles selected by the teachers. The students in group C were particularly displeased over the project title assigned to them, as shown in the following extract:

Jane (Group C): After all the project is also meaningless…
Interviewer : The project is meaningless? Why?
Jane : Some of the projects they give us are so boring. It's like… not our kind…the project itself is not even nice to do.

The students in this group also expressed their views about being at a loss over how to start planning for their project and about the pressure they felt at having to submit their project proposal.

Nora: When we plan, we sometimes cannot think. Then the teacher will start to force us to hand in our plans. It's very stressful…We cannot think, we run out of ideas…

The Research/ Information Processing Stage

Three of the groups commented that they encountered difficulties looking for reading materials for their projects. They expressed frustration over the fact that they were unable to find the relevant information when searching over the internet.

Lina (from Group B): Sometimes the website can give you the wrong information.

Interviewer: What do you mean? Website gives you the wrong information?

Lina: For example, when you ask for hamster cage, they give you something else.

Of the four groups, only Group A mentioned that they were given the option to have recourse to primary sources of information such as survey data. However, the students did not have adequate training in research methods such as conducting surveys and data gathering. It is not surprising therefore, that none of them chose to attempt these procedures.

The Implementation/ Design/ Production Stage

Two of the groups commented that they found this stage enjoyable and generally, the main reason given was because of its hands-on nature.

Interviewer: Do you have anything to share with us about designing your own project?

Laura (Group A): Sometimes it's fun.

Interviewer: Fun? What is fun?

Laura: You can try out new stuff.

Despite the pleasure they derived in coming up with their project prototype or design, the students promptly recognized the obstacles they encountered. Amongst the common problems were the difficulties in getting the right materials for their prototype and the lack of funds for the purchase of materials.

Sally (Group A): They have to go and find the materials to make [the model]. Sometimes, when you buy the wrong material, then you waste money, then people will complain.

Xavier: Difficulty in buying the project materials. Also, we do not have enough money.

Another major challenge that the groups had to face was the perennial difficulty of finding the time to make the prototype and/ or write the project report.

Sheena (Group B): The project work, one thing about it, is that it clashes with our other activities, like studying, CCA (co-curricular activities).

Interviewer: Do you meet after school?

Sheena: Ya, sometimes we can't because we have our own CCA activities.

Group Dynamics

Although one of the aims of PW was to encourage students to work cooperatively with one another, students from all four groups admitted that at one point or another, they encountered difficulties getting along with other group members. They reported that they could not reach a consensus at the planning stage, when deciding on the nature of the project and at the implementation/ design stage, when proposing solutions or designing the products.

Ben (Group A): Some of them group members disagree with this kind of project. …some of them cannot agree with each other.

Sally: The group members don't appreciate what we have done for them. When we have produced the solution already, they would say: "this solution is no good, I have a better one." They started to suggest their own solutions; other people liked their own solution, so the group is like separated in many, many parts.

Jane (Group C): I don't like PW meetings…because of PW, we quarrel and argue for no reason and for stupid things.

In order to get the projects going, the group leaders resorted to one of two autocratic strategies: either choosing the topic and "forcing" the group members to carry it out, or doing most of the work on their own.

There was, in addition, a high rate of absenteeism at meetings, with members showing their lack of interest in the enterprise.

Ben (Group A): Sometimes, we plan to meet together, but then …after school, they refuse to come to do research,

so in the end, only a few of them turn up.

Sally: There's a deadline to meet, and there's a solution and nobody wants to help out…it's very tough for one person to do all the work. My group is not very cooperative in helping other people.

Even when all the group members do turn up, they do not necessarily contribute constructively to the group discussions. There are members who merely chat about things that were of little or no relevance to the project.

Sally (Group A): It's like…you can say that when there are more people in a group, there are more heads to think, right? And there's a better solution. But then in actual fact, there are only a few people who think, and the rest are like, talking nonsense. And they think that what is being discussed are unimportant things, and when it gets to a very important stage, then they come back and concentrate on the stuff that we have to do.

The Communication/ Presentation Stage

In the last stage of the project, each group is required to make a short presentation of their findings to the rest of the class. This is carried out in the presence of the teacher(s) and occasionally, other guests. Students from all four groups admitted to feeling very nervous at the prospect of talking in front of an audience. Some mentioned about getting stage fright and forgetting what to say.

Interviewer: How about the last stage – communication, like making an oral presentation?

Jane (Group C): Very shy.

Ted: Don't know what to say.

Nora: When there's nobody in front of you, then you have got a lot of things to say, but when you have VIPs, all the important people coming, you cannot say anything.

Students from the other groups shared other problems that they faced during their oral presentations, namely:

- poor time management (some groups taking an unduly long time for their presentations);
- script writing (group members having no interest in writing their scripts);
- poor presentation skills (insufficient preparation, presenters mumbling or merely reading from their scripts, arguments about who should speak first);
- uncooperative audience members (members of the audience teasing the presenters).

Perceptions regarding Teachers

Although most of the students interviewed only commented on their teachers' roles in overseeing their projects, one particular group was unhappy with their teacher 'nagging' them about their work.

Students' Learning

Despite their reservations about PW, all four groups were in agreement that it provided them with the opportunity to hone their abilities and skills in the following key areas:

Leadership. The students felt that they were able to improve their decision making and planning skills and to apply them beyond the realm of the classroom.

Stanley (Group B): You need to find out more ideas, and deliberate a lot, and that helps us…

Lina: We [have] got so many ideas [in] the end. We have to take out some of them, [and] then we have to make a decision to choose one.

They also learned how to delegate tasks and responsibilities to others and in addition, mastered the courage to speak in public.

Jane (Group C): I think because you can speak up in front of a lot of people, [the] next time you go [for] meetings …you are not scared of seeing a lot of people around you.

Responsibility. At least one group mentioned about learning to do their part and about punctuality in meeting deadlines.

Laura (Group A): Maybe because you are a group member…you have to do what you are asked to do. You have your own responsibilities, so you have to do it.

Nick (Group C): You must please other people, like be on time for meetings, then next time we grow up, maybe we can do the same.

Teamwork and Cooperation. All the four groups mentioned that the greatest improvements in their learning occurred in these areas, that despite the lack of cooperation

amongst team members, they tried to work together by listening to others and by trying to understand and respect their views.

Laura (Group A): At the beginning of the project, everybody is like doing their own stuff. At the end of the project, then we realize that we just put up something new as a group.

Nora (Group C): We must try to cooperate. It's best to cooperate, then when you work, you can get along with colleagues.

Wendy (Group D): We cooperate with our leader – sometimes. We tried to give our opinion…Usually we have different opinions that we encounter, so we try to solve it by listening to each of my friends.

Interviewer: How do you come to an agreement?

Tammy: By listening to their opinion and trying to gather all the ideas there…We try to…use the best idea…

Alvin: I and my school friends combined all our ideas; we helped each other… When we do the project, we can know each other more.

Creativity. Three groups mentioned that they were able to unleash their creativity in designing and building models or prototypes for their project. Although in most instances, their designs were fraught with flaws, working together on the project provided, in the least, the opportunity for the students to think outside the box and beyond the scope of the academic curriculum.

Suggestions for improvement

One member of Group A candidly questioned the need to implement project work, voicing her doubts about its relevance to students after they have left school. Others in the same group suggested a reduction in the duration of the weekly time slot allocated to project work, giving such reasons as the lack of interest and motivation of almost the entire class in such an enterprise, leading to the situation whereby most people resort to last minute work for the sake of completing the task.

Two of the groups brought up issues related to the scheduling of PW, giving suggestions to change the timing of the implementation period, such that there is minimal interference between their involvement in PW and their focus on their studies and co-curricular activities. Finally, it was proposed that students be allowed to form their own groups rather than be arbitrarily assigned to groups by teachers. The students felt that this would improve collaboration within the group and reduce the deadlocks arising from endless arguments amongst members.

Discussion

This study examined the perceptions of low ability students in regard to project work and the extent to which such a cooperative learning strategy has been effective in this setting. We aimed to investigate the nature of the benefits gleaned from project work and the problems encountered by students during the process. In addition, we were interested to know the extent to which low-ability students were predisposed towards the use of project work as a learning approach. Our assumptions were that:

1 cooperative learning, and thus project work, provides the opportunity for students to develop their social and communication skills;
2 group project work fosters cognitive development by promoting interaction amongst students.

The results show that these assumptions are only partially upheld as far as the low ability students are concerned. In this study, although the students recognized some of the benefits of project work, its effectiveness amongst the low ability groups is often hampered by the plethora of organizational and administrative difficulties and setbacks, the effects of which were reflected in the comments voiced by the students themselves. These problems seem to fall within the four specific domains outlined in the ensuing paragraphs.

Organisation

It was observed that seemingly mundane issues, such as the timing of implementation and the availability of funds, worried the students sufficiently enough to distract them from their tasks.

With regards to the scheduling of project work, the problem lies in the fact that schools are fast turning into 'educational theme parks' where school administrators, teachers and students are constantly being assailed by the merry-go-round of events and activities which they are required to organize or take part in. As such, students are left with no other alternative than to find ways and means of juggling several activities (e.g. project work, studies and co-curricular activities) simultaneously and to devise the best

way to manage their time. It is assumed that the students, when facing such challenges, would rise to the occasion and become master planners. Unfortunately, this assumption does not always translate into reality and the less able students are likely to fall behind in their work. Alternatively, they may decide to prioritize their tasks and put less effort in those that they consider of lower importance or relevance. Our findings revealed that a number of the low ability students interviewed did not consider project work as important, and this was reflected in their frequent absenteeism from meetings and discussions, as well as their general lack of interest in the whole endeavor.

With regards to funding, our findings indicate that some students experienced difficulty in sourcing for funds for the purchase of project work materials. Schools implementing project work in their curricula should consider (if they have not done so) allocating part of their funds towards sponsoring the students' projects.

Students

Since students are the principal stakeholders in the implementation of project work in schools, the success of the program is closely tied with how well it is received within the student community. Below are the key areas that need to be reconsidered in order to get more students to recognize the value of project work.

Training and preparation

In general, many of the problems plaguing project work implementation arose from the fact that students were inadequately prepared for such programs. None of the four groups interviewed mentioned about having received formal training in the skills required for group project work. In many schools, although there was evidence of some briefings and instructions given to students regarding the project tasks, there seemed to be no effective systematic instructional programs (Johnson & Johnson, 1987; Johnson, Johnson, & Holubec, 2002; Lonning, 1993) to guide students towards the right approach to group work. The ground rules (Brown & Palincsar, 1989; Mercer, Wegerif, & Dawes, 1999) necessary for the effectiveness of collaborative endeavors may not have been laid down clearly prior to group work.

The confusion and lack of focus experienced by the students were apparent in the interview transcripts. Similar observations were reported by other researchers (Edwards & Mercer, 1987; Barnes & Todd, 1995) who noted parallel situations whence no explicit guidance was given to students prior to assigning them a task or an activity. Inferring from the students' discourse on the lack of cohesion and cooperation amongst group members, much remains to be done before group project work can claim to fulfill the social goal that, as a cooperative learning strategy, it is envisioned to achieve (Ossont, 1993). It is indeed unrealistic to expect that, by simply gathering students into groups, these young people of diverse backgrounds and personalities would spontaneously develop the right social skills to interact effectively with one another. Collaborative skills need to be instilled and what is needed is a systematic instructional program to prepare students to work effectively in groups.

Group dynamics

Although one of the aims of cooperative strategies is to allow students to achieve greater autonomy for self-directed learning, the results of this study showed that in many cases, teachers still exerted considerable control over the groups, namely in terms of the choice of the project and the composition of the groups. Furthermore, our findings support the views of other researchers (Marrow, 1965; Mueller & Fleming, 2001) who suggested that when groups were allowed to work independently, they were more productive and achieved better cohesion than when they were constantly monitored. Group D in which students were allowed to choose their own project title, if not their group members, seemed to have been more productive in their task than the other groups.

There are, however, valid reasons for teachers to conduct the group selection process themselves, rather than allowing students to form their own groups. These include ensuring mixed-ability grouping, promoting better interaction amongst class members and discouraging clique formation or exclusion of the less popular members and loners. In an interesting study on the social interactions of ability-grouped dyads, Jones and Carter (1994) found that pairing a high ability student with one of lower ability had positive effects on the performance of the latter. The high ability students helped their low ability partner to focus on the task, to identify its key features and even monitored their progress. In contrast, in low ability dyads (pairing two low ability students), both partners had difficulties focusing on the task, tended to argue and compete with one another, and eventually failed to complete their assignment. In our study, the classes involved consisted predominantly, if not entirely, of students of low academic ability and/or inclination towards learning.

It is likely that when working in groups, they encountered a similar experience as the low-ability dyads. They were unable to make good progress in their task because few or perhaps even none of them had the pre-requisite knowledge, language or experience to carry out the task.

In view of this, the process of grouping students *within* a low ability class, might have contributed to the students failing to benefit fully from cooperative learning. Teachers may thus consider exploring the idea of inter-class grouping which would allow students from a high-ability class to interact and work with those of lower ability. To minimize personal conflicts within the groups, one way forward is to work out a compromise, whereby students are allowed to negotiate for their grouping if they have good reasons for being dissatisfied with the original selection.

With regards to group size, we observed that large groups comprising more than six students were less effective in carrying out their tasks and encountered more internal strife amongst their members than smaller groups with about four to five members. These were aggravated with large classes (exceeding 45 students) consisting of many groups under the supervision of a single teacher. It is therefore recommended that group size and the number of groups per supervising teacher should be kept low.

Leadership

'An army of a thousand is easy to find, but, ah, how difficult to find a general'. (Chinese proverb)

The sayings of this proverb are reflected in the findings of this study since the groups interviewed did not seem to have benefited from effective group leadership. There were comments such as ' the leader decides', 'the leader does the most', 'my leader pushes the work to all the group members' and 'my group leader is always scared, does not know what to do'. It appears that group leaders were appointed (usually at random) by teachers, mainly to serve as coordinators for the project. The following discourse suggests the inadequate preparation of the group leaders for their tasks.

Interviewer: Have you learned leadership skills in PW?
Laura (Group A): Like what? I don't know. What do you mean by 'learn leadership'?

Without effective leadership skills, the group leaders were akin to shepherds without flocks. It is not surprising that they had great difficulty herding their group members in the right direction. Kurt Lewin's team (Mueller & Fleming, 2001), in their pioneering studies on group work, recognized that the absence of effective leadership was adverse to task productivity and led more often to dissent and discord amongst group members. We suggest that the selection of group leaders should follow a more systematic procedure based on their leadership potential, and that once chosen, the leaders should be given some form of training to prepare them for their role.

Teachers

Although we recognize that there are many good teachers who try hard to connect with their students and to find effective approaches to nurture them, it is perhaps high time to move away from the 'one shoe fits all' strategy when implementing project work in schools. Currently, the tendency is to use same teaching approaches and instructional methods for all students, irrespective of their ability levels. It is presumptuous to assume that the existing framework, which works fairly well for high-ability students, could apply equally well for the low-ability groups. Pedagogues should explore a differentiated approach to project work implementation, customizing the nature of the tasks and instructional strategies to suit the levels of understanding and motivation of the students.

Conclusion

The findings of this study showed that low-ability students were able to recognize some of the benefits of cooperative learning and collaboration through project work. However, there are numerous problematic issues, mainly organizational and instructional in nature, that need to be addressed and rectified before these students could feel favorably disposed towards undertaking project work. A restructuring of the program is needed to align it with the real needs and aptitudes of the students.

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