



Review of
Educational Research
and Advances for
Classroom Teachers

REACT

A Publication for Educators

Special Issue
Collaborative Learning: Educating for Change

Guest Editor
Phillip Towndrow



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REACT is a publication of the National Institute of Education, Nanyang Technological University, Singapore, that aims to keep student and experienced teachers, senior school personnel, principals and educational administrators abreast of recent advances in research in education. The journal, which is published bi-annually in June and December, presents summative reviews of recent research studies related to a particular area of interest, and discusses significant implications for school and classroom practice.

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Guest Editor's Preface

The terms "collaboration" and "collaborative learning" are two high-usage items in the lexicon of modern educators. But how many of us have stopped to consider what they really mean or imply for pedagogic practice? As far as collaboration is concerned, many see an equivalence of meaning with the concepts of "working together" and/or "teamwork". On this basis, collaboration, or cooperative learning as it is also known by many, becomes a practical issue of organizing students into groups and setting them specific tasks to complete. Students who can successfully work with others are deemed to possess valuable and marketable skills.

Another view considers the aims of collaboration and collaborative effort differently. For Edwin Mason—considered the founding father of the collaborative learning movement—collaboration involves "... open[ing] up the minds of members of a collaborative team to each other and to the possibilities that lie beyond the reach of any of the individuals" (Mason, 1970, p. 112). Although Mason makes a point of not wanting to limit the scope of collaborative learning by defining it, his conceptualization opens the way for deep-meaning intellectual enterprise. For Mason and many other writers since, collaborative learning is about reforming the aims of education and changing the way teachers and students relate to each other both in and beyond the physical classroom.

The articles in this special issue entitled "Collaborative Learning: Educating for Change" approach the aforementioned matters from the perspective of educators in Singapore. For the most part, the authors consider applications of collaborative and cooperative learning techniques and draw implications for pedagogic practice from their knowledge and experience. The contributions are derived from a variety of disciplines and celebrate work done at the National Institute of Education, Singapore. Insights, for example, are drawn for educators in the fields of service-learning,

teacher and learner training, teacher professional development, and the use of information and communication technologies.

My thanks are due to those who helped me compile this issue of REACT: members of the editorial board, invited readers and the members of staff at the National Institute of Education, Singapore, who contributed articles for consideration. In particular, I owe a debt of gratitude to Dr Janet Holst for agreeing to the idea of this special issue.

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Phillip Towndrow

Cooperative Learning: Building Strong Teams for International Service-Learning Projects

George Jacobs and Vilma D'Rozario

Introduction

Cooperative learning and service-learning both encourage students to reach out beyond themselves for the benefit of all. Cooperative learning is a teaching methodology that offers "principles and techniques for helping students work together more effectively" (Jacobs, Power and Loh, 2002, p. ix). Service-learning seeks to involve students in service to others at the same time that students learn important insights, skills and knowledge in line with the curriculum of their educational institution (Eyler and Giles, 1999).

This paper opens with a description of a service-learning project in Sikkim in which NIE (National Institute of Education, Singapore) students participated. Following that, the fit between cooperative learning and service-learning is discussed. Finally, a few implications for Singapore teachers are suggested.

Service-Learning and Cooperative Learning in Action: The Case of NIE Students in Sikkim

In June 2003, two NIE-SIF (Singapore International Foundation) Youth Expedition Project teams embarked on an unforgettable adventure—to work with the children, teachers and community of East Sikkim. Below is a description of what our goals were, who we were, how we worked together and what we achieved.

Our tasks were to:

1. Work with children and teachers of a privately run village school—teaching the children, sharing curriculum ideas with the teachers, upgrading infrastructure, setting up learning corners, expanding library resources and introducing IT hardware and software.
2. Upgrade the infrastructure of a home for children of low income families, particularly to provide funds for the building of a multi-purpose hall, painting of the home and refurbishing the dormitories, setting up a library corner and introducing IT hardware and software.

Our group of 42 trainee teachers and one lecturer-advisor was a heterogeneous bunch—10 men and 33 women, who came from eight different programmes at NIE. We also benefited from the participation of two teacher-participants from a local primary school. We decided to put together the project teams based on the cooperative learning principle that heterogeneous groups are preferable in most cases. Each project team comprised a diverse group based on gender, ethnicity, age and religious beliefs. Coming from diverse backgrounds, we were able to bring our backgrounds and experiences to the group as resources. For example, on Culture Day celebrated at the school at Chongey, East Sikkim, our group wore Chinese, Malay and Indian national costumes, danced ethnic dances and cooked a food fiesta of Singaporean food—a fusion meal of Chinese, Malay, Indian and Western fare. Learning about the Sikkimese cultures from the kids and teachers was rewarding as was sharing with them the cultures of Singapore. Diversity was celebrated.

A first major activity for the Singapore contingent was pre-expedition team-building 5 months before embarking on the expedition proper. We did this at an eco-camp in Mawai, Johor, where we had to live in basic conditions. During this overnight camping experience, we divided randomly into groups and came up with group rules and expectations for the expedition. Groups also took part in an obstacles course, where we had to work together to surmount obstacles, and had to build a raft out of drums and ropes and launch the raft on the water together—literally putting the "We sink or swim together" philosophy of cooperative learning to the test. A highlight of the experience was the campfire where each group had to present a music or dance item. At the overnight camp, the two project

teams were formed and time was provided for each team to decide on their team name and to start expedition planning in sub-groups.

The cooperative learning principle of positive interdependence was at the heart of this expedition. All participants had a common goal, that of working with the kids, teachers and community in East Sikkim. After the first bonding exercise in Mawai, the teams got together to work on programme planning and fund-raising. The group raised funds by selling ethnic merchandise and project tee-shirts at bazaars, washing cars, and organizing a fund-raiser at the Hard Rock Café. The fund-raisers and the 6 months of collaboration on various tasks served to bond members of each project team together. Teams learnt collaborative skills along the way.

During the expedition itself, positive interdependence was crucial and encouraged. Big events at the school, such as Fun and Sports Day (a day of games led by trainees where all kids of the school were involved), Culture Day (a day of sharing of cultures between the Sikkimese kids and teachers with the Singaporean trainee teachers) and the Food Fiesta (where the Singaporean teachers cooked for the Sikkimese kids and teachers) were opportunities where everyone had to pitch in and help, each bringing to the group their own expertise, energy, enthusiasm, patience and perseverance. Strong bonds were built within each project team. Strong bonds were also built with the children and with the Sikkimese teachers.

Group autonomy, that is, group members depending on each other rather than authority figures, was encouraged. Each team was led by trainee teachers. Team leaders and facilitators were trained by the Singapore International Foundation. The lecturer-in-charge played an advisor-mentor role. Each team sub-group had specific responsibilities, for example, logistics, or social-cultural activities, and were given the opportunity to decide on how to accomplish their special responsibilities. Simultaneous interaction, that is, many people participating at the same time, rather than one at a time as called on by the teacher, was inevitable as there was much to do and this required everyone to be actively involved in some task or another, all working towards a common goal. Equal participation among the groups was encouraged and because all were committed, each felt the need to be individually accountable to their groupmates and to the overall project.

Expedition take-aways were positive. Participants truly implemented the principal of making cooperation a value to be lived and studied. Besides the forging of friendships within and between groups, expedition participants learnt that it is important to be happy with what little one may have and that each had talents to share. They felt happy to be appreciated and were happy to contribute in some way to the experiences of others.

Linking Cooperative Learning and Service-Learning

After the concrete example from Sikkim of the combination of cooperative learning and service-learning, let us look more abstractly at six ways that cooperative learning and service-learning link to one another:

1. Service-learning fits with the cooperative learning principle of heterogeneous grouping, because in service-learning students help and try to learn from people in different circumstances than themselves. Thus, the same spirit of strength via diversity applies. In cooperative learning, students benefit by working with fellow students different from themselves. In service-learning, students benefit when their project leads them to collaborate with people outside their school who are different from themselves.
2. Cooperative learning emphasizes building students' collaborative skills. As we saw in the Sikkim project, such skills are also vital in service-learning, where students need to work effectively with fellow students as well as with people in the communities they serve.
3. As students venture outside the classroom, even to other countries, in their service-learning projects, they are taking major steps away from a teacher-centric form of learning in which students' every action is done in response to teacher commands. Instead, in line with the cooperative learning principle of group autonomy, students come to rely on their groupmates for mutual support, with their teachers sometimes in the background.
4. Service-learning shares common characteristics with other learning formats. Cognitive psychology tells us that learning takes place best when students are actively engaged in thinking about and doing the tasks at hand (Webb, Farivar and Mastergeorge, 2002). In line with this insight from cognitive psychology, three cooperative learning principles in particular help facilitate greater student activity. Simultaneous interaction (Kagan, 1994) does so by allowing many students to take an active role

in the exchange of ideas at the same time, rather than one student at a time being called on by the teacher. Equal participation seeks to ensure that these participating students will not always be the same more talkative ones. Finally, individual accountability puts pressure, cushioned by group support, on students to utilize the participation opportunities provided. In this way, cooperative learning, a generic methodology applicable to all types of students and content areas, can increase the effectiveness of service-learning endeavours.

5. Positive interdependence (Johnson and Johnson, 1999) lies at the heart of cooperative learning and was essential to the success of the Sikkim project. Service-learning allows students to live the idea that in this world in which we are connected in myriad ways to our fellow humans and the other organisms with whom we share the planet, we all benefit by helping one another. Service-learning, thus, supplies real substance to this appreciation of global positive interdependence. All too often, education about various global issues results in nothing more than additional hot air expelled (figuratively worsening global warming) and more trees chopped down for paper (literally worsening deforestation). In other words, global topics receive "academic" treatment in the negative sense of that term. In contrast, service-learning allows students to put their concern for others into action.
6. In this way, service-learning invigorates cooperative learning. Although the cooperative learning principle of *cooperation as a value* moves from the "how" of teaching methodology to address the "what" of students' studies, values are meaningless if they do not translate into behaviours. Furthermore, behaviours can reinforce values. Here, we see most clearly the interface of cooperative learning and service-learning.

Discussion

This paper has presented the argument that service-learning and cooperative learning fit well together and that the combination of the two strengthens each. The paper began with an account of a service-learning project in which NIE teacher-trainees collaborated with people in Sikkim. The actualization of cooperative learning principles helped increase the project's level of success. Then, connections between cooperative learning and service-learning were explored on a more abstract level.

The authors of this paper believe that two cooperative learning principles deserve to be highlighted whether students are involved in service-learning thousands of kilometres from home or in simple cooperative learning tasks in their own classroom. These two cooperative learning principles are *positive interdependence* and *cooperation as a value*. Positive interdependence promotes a realization that students are linked in a win-win manner not only with their groupmates, but also with the rest of the planet, human and non-human. Cooperation as a value encourages students to ponder and practice this realization.

However, this emphasis on the commonality of interest we share with others, whether they be seated next to us in the same classroom or on the other side of the same planet, can be dismissed as ignoring the apparent dog-eat-dog, look-out-for-#1 nature of present-day interactions that take place among humans and between humans and other of the planet's creatures. For this reason, both cooperative learning and service-learning are criticized for not preparing students for the cold, calculating, nice-guys-finish-last world of hard knocks, which they will face upon graduation.

To reply to this criticism, while not denying the competition and selfish individualism that abound in the now, service-learning and cooperative learning hope to encourage students to prepare themselves and others for a better future. As Gandhi said in rejecting a worldview based on negative interdependence (You swim, I sink; I swim, you sink): "*An eye for an eye leaves the whole world blind.*" By encouraging students to work together with their fellow students to help and learn with people beyond the school walls, cooperative learning and service-learning attempt to guide students to *see* a path towards that better future.

Implications

The Sikkim Service-Learning project illustrates a number of cooperative learning approaches in action. For instance:

- Forming groups in, which students are mixed on one or more of a number of variables (including gender, ethnicity, social class, religion, personality, age, language proficiency and diligence) can have a number of benefits, such as encouraging peer tutoring, providing a variety of

perspectives, helping students come to know and like others different from themselves and fostering appreciation of the value of diversity.

- In order for students to work together effectively with others they need collaborative skills. These include:
 - asking for and giving reasons;
 - disagreeing politely and responding politely to disagreement;
 - encouraging others to participate and responding to encouragement to participate.
- Positive interdependence is a crucial cooperative learning principle. It exists among members of a group when they feel that what helps one member of the group helps the other members and that what hurts one member of the group hurts the other members. It is important, therefore, for students to share common learning goals.

Cooperation as a value takes the feeling of "All for one, one for all" and expands it beyond the small classroom group to encompass the whole class, the whole school, on and on, bringing increasingly greater numbers of people and other beings into students' circle of ones with whom to cooperate. Rather than cooperation being only a way to learn, that is, the *how* of learning, cooperation also becomes part of the content to be learned, that is, the *what* of learning.

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Constructing Knowledge Building Communities in Classrooms

Chai Ching Sing and Tan Seng Chee

Introduction

The present knowledge-based economy places great demands on today's workforce. Much of the higher-level work requires workers who are able to do self-directed learning, possess good thinking skills and work collaboratively. For our society to sustain continual economic growth and to remain competitive, our schools have to change responsively to equip our students with the necessary attitudes, skills and knowledge of workers. One of the key competencies of a knowledge worker is working with novel ideas: generating, discussing, testing and refining ideas. As knowledge work is best carried out in collaborative settings, learners must possess communication skills that promote productive group processes. This is also the rationale underpinning the reform-oriented initiatives in Singapore such as *Thinking Schools*, *Learning Nation*, as well as the IT Master Plans.

In this article, we will introduce an approach known as Knowledge Building Community (KBC) that provides an hospitable social context for learner's ideas to be seeded and developed (Scardamalia, 2000). It changes the knowledge telling discourse structure of traditional classrooms, which typically occurs in the following sequence: teacher initiates questions → students answer → teacher evaluates and elaborates on students' answer. Instead, KBC engages students in knowledge transforming discourse through collaborative improvement of ideas. It is closely related to collaborative learning advocated by Johnson and Johnson (1997) in which a small group of students works together towards a common goal. We believe that KBC is an appropriate approach for promoting thinking and communication

skills in our local context. In the following sections, we will explain the fundamental philosophy behind the KBC approach, illustrate the ideas with some of our research data and provide some guidelines on how to implement this approach in our local classrooms.

Review of Research

Knowledge Building Community

The overall approach of a KBC emulates research work in an intellectual community in which members work collaboratively to advance the knowledge of a domain (Scardamalia and Bereiter, 1992). A research team is usually formed by members who have some common research interests. The team members formulate research questions and sub-questions, generate some initial ideas or hypotheses based on what they already know, identify what they need to understand and proceed with the research. To answer their research questions, team members usually have to make use of existing materials collected from a variety of sources such as journals, books and the Internet. They have to conduct empirical studies such as experiments, field trips or surveys to verify their hypotheses. The data collected are then compared with the team's initial ideas and are used to refine the ideas. This process helps the research team in understanding the phenomenon being investigated. The process inevitably requires members to meet regularly either 'face-to-face' or online. The meetings allow members to share information, build on each others' findings and ideas, and thus advance the team's collective understandings. Naturally, such processes involve serious discourse as the mediator of learning among team members.

Implementing KBC in the classroom is, then, a task of creating research teams in the classrooms. The overarching goal for this seemingly daunting task is to enculturate students to be knowledge workers who can transform and add value to ideas through collaborative discourse (Bereiter, 2002). In so doing, the students are also learning to talk and think like the experts in the intellectual community. This is important because the thinking processes that the experts employ are embedded in the forms of discourse.

Technology Supporting KBC—Knowledge Forum

To support the implementation of KBC, a piece of software known as Knowledge Forum was designed by the founders of KBC (Scardamalia and

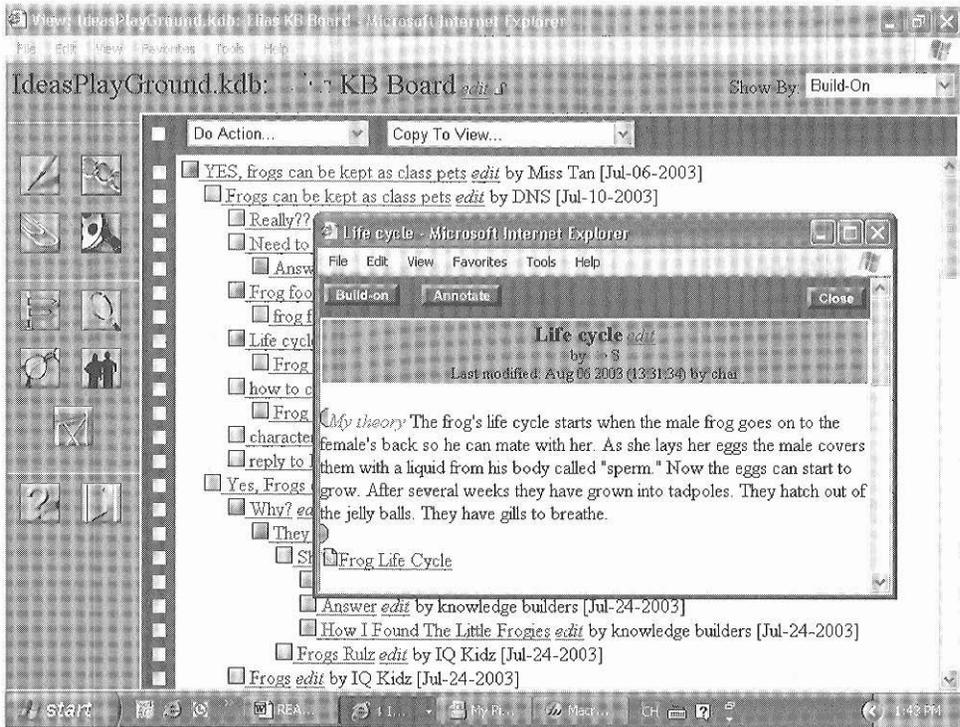


Fig. 1. The interface of Knowledge Forum.

Bereiter, 1994). It is an asynchronous discussion forum that acts as a collective database. Any member of a community can submit a posting (which is called a Note) and read each other's Notes. As a communication platform, it eliminates turn taking that is required in face-to-face discourse and alters the teacher-centred structure that is prevalent in ordinary classrooms. Figure 1 shows a screen capture of the software from one of our local databases.

Although it may look like an ordinary discussion board, it has a number of features that are specially designed to support knowledge building discourse. First, it allows teachers to provide prompts for students known as scaffolds. These are metacognitive prompts guiding the students in online discourse in the discipline that students are learning. For example, the generic scaffolds include prompts such as "My Theory is", "I need to understand", "New Information", which are designed specifically to engaged students in making scientific hypothesis, identifying gaps in knowledge and sharing new information. Teachers can design scaffolds, such as "This theory cannot explain", "A better theory is", to encourage students to challenge each other and thereby fostering a progressive

inquiry. Second, features such as "Build On" and "Rise above" encourage students to build on each other's ideas and summarize ideas at a higher level of conceptualization. Third, the Notes can be revised as students' understandings improve. These features help to foster a knowledge transformation discourse among the participants.

Research Evidence

Although implementing KBC is not an easy task, it will repay the time and energy invested. Results of studies conducted in Canada and Singapore provide some support for the claim that implementing KBC in the classroom helps to better equip students for the knowledge society. Studies conducted in Canadian primary schools have to date indicated that students participating in KBC outperformed students in ordinary classrooms in terms of depth of learning, inquiry and reflection (Scardamalia and Bereiter, 1994). In terms of traditional assessment such as standardized reading and vocabulary tests, KBC students scored significantly higher than other students (Scardamalia, Bereiter, Brett, Burtis, Calhoun and Smith Lea, 1992). Interview transcripts from grade six students who had experienced KBC show that they developed a sophisticated view about research and a commitment towards thorough research (Lamon, Secules, Petrosino, Hackett, Bransford and Goldman, 1994).

Local studies in the context of scientific inquiry at secondary school levels showed significant improvement in students' scientific inquiry skills (Tan, So and Hung, 2003). Teachers who had participated in implementing KBC generally valued the accessibility provided by the technology. They employed Knowledge Forum in problem-solving projects, scientific inquiries and project-based learning for a variety of subjects. They were happy that given accessibility of the technology, their students were able to engage in independent learning, conduct wider research and share their knowledge. They were also pleasantly surprised by the ability of students in handling complex problems of understanding in a KBC (Chai, Tan and Hung, 2003).

Application Guidelines

In the following section, we will attempt to illustrate the steps in fostering a KBC in our classroom environment. The examples used are adapted from

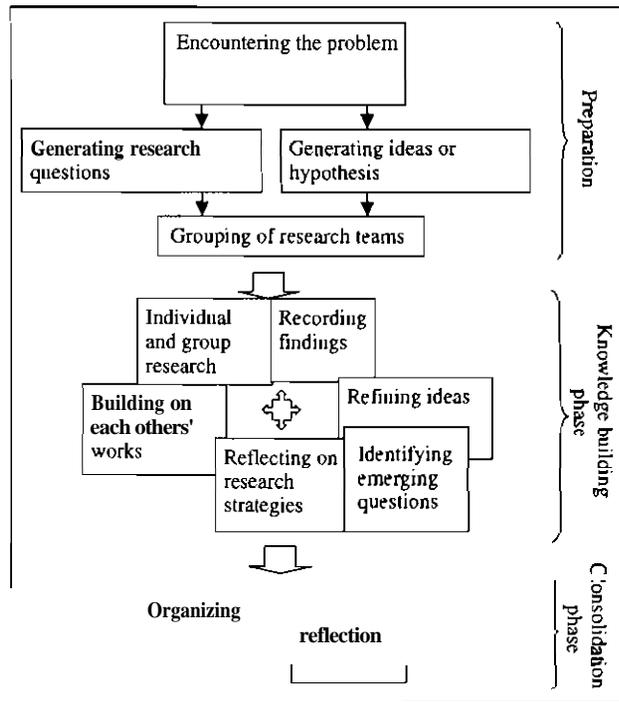


Fig 2. Implementation model of KBC.

one of our local teachers' efforts. Figure 2 shows a model that we have formulated culminating from the results of research studies (e.g. Caswell and Lamon, 1998; Lamon, Reeve and Scardamalia, 2001).

The Preparation Phase

In the preparation phase, the key task is to engage the students with authentic problems. Authentic problems are problems that students care about (Scardamalia, 2002). Unless teachers have a very good understanding of the students they teach, it is difficult to craft authentic problems that are sustainable in research. As such, we recommend that teachers craft a main theme in the form of driving questions and allow the students to modify the theme or generate sub-questions pertinent to the theme. Once the research questions are generated, students should generate ideas or an hypothesis as a starting point of their research. This will help students to link what they know with what they are going to investigate. Teachers can then group the students according to their research interests. At this stage, it is also advisable for teachers to guide the students in formulating some

research plans. The following paragraphs document a real example from a local classroom.

When teaching students about animal adaptation, a primary six teacher presented the main question "How do animals adapt to their environment?" to her students. She began her lesson by bringing live crabs into the science laboratory. Students were asked to make careful observations of the crabs' body parts and later to dissect the crabs. She scaffolded students in making observations and hypotheses on how different body parts help the crab in adapting to its environment. Students then entered their ideas in the form of individual or group Notes. Figure 3 shows the result of the lesson in a "Rise-above" (summary) Note that summarizes different students' contributions into one single Note. Through such learning episodes, students began to generate interest in studying the various body parts of animals. The teacher also encouraged students to identify further inquiries by creating scaffolds such as "I need to understand and "New Information".

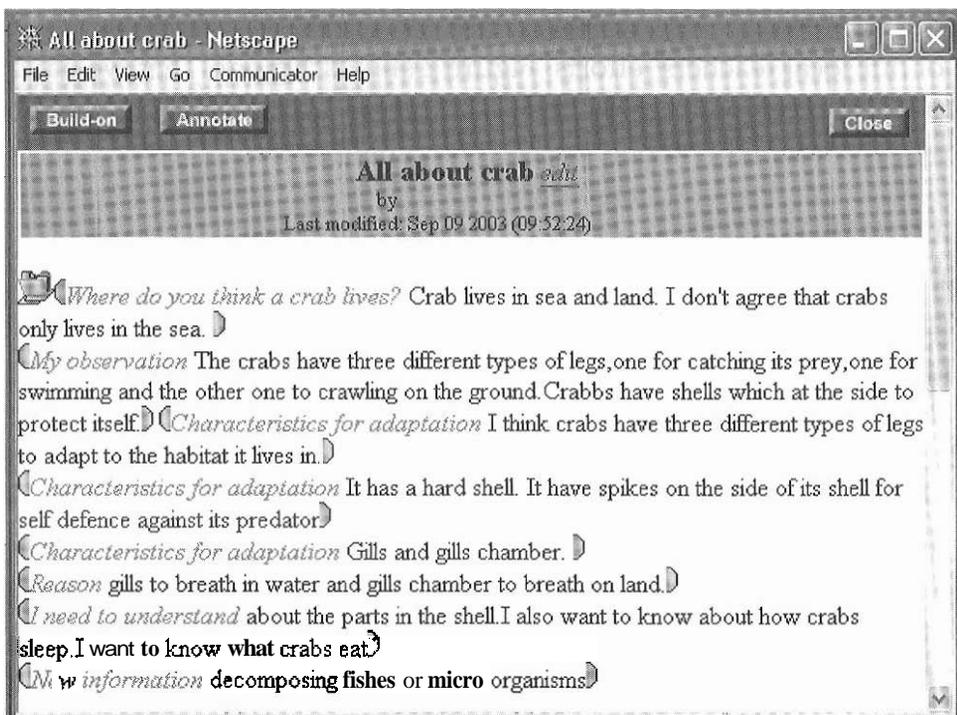


Fig. 3. Sample of pupils' notes of discussion of animal adaption.

In the subsequent lessons, the teacher allowed her students to choose the animals they wish to study and formed groups based on their research interests. The students were able to generate Notes that explain how different animals adapt to their environments. They went well beyond the information given in the textbook both in terms of breadth and depth.

The Knowledge Building Phase

During this phase, there is usually a myriad of activities that go on concurrently. Students may be busy doing research work such as searching the Internet for information, designing experiments or other forms of empirical studies. They may also be recording their findings, reading Notes posted by other students, challenging or elaborating fellow classmates' ideas using the build-on function, refining their own understandings and identifying emerging issues. These activities contribute to the advancement of knowledge within the class.

The diverse activities and ideas can be quite a challenge to the teachers. When the students are actively posting Notes, it is almost impossible for teachers to keep track of what is going on both in the database and the classroom. Teaching strategies for dealing with this problem include benchmark lessons and cross-talk (Caswell and Lamon, 1998). Benchmark lessons are designed to address emerging issues that students cannot resolve at their level. Teachers can provide explanations to difficult concepts or model problem-solving processes for the students. As the research questions generated by the students may be beyond the teacher's knowledge, experts can also be invited to help the students. Cross-talk is basically time set apart for various research groups to report on their findings. It provides opportunities for the teachers and the whole class to monitor the community's progress as a whole. It also provides opportunities for the peers to challenge the reporting groups' findings and thus allow the reporting groups to further their research.

The Consolidation Phase

The closure of knowledge building activities can be at times rather artificial. This is because a true KBC is one that is marked by continual improvement of ideas. There is usually a deepening and progressive discourse. It is therefore not uncommon that many interesting questions remain unanswered in

the discussion. During this phase, students select and combine Notes that represent their understanding. They may create different pages to place their Notes and link the pages. This helps the students in organizing their knowledge in the form of hypermedia. At this stage, it is beneficial for the students to use the recorded interactions for reflection on their research effort. They can identify strengths and weaknesses of their research strategies, group processes and utilization of resources.

Challenges of Building a KBC

Building a KBC is by no means an easy task. In this section, we discuss some of the potential obstacles that teachers might face based on research reports and our experience. One potential problem is sustaining the inquiry. We have experienced difficulties due to students' reluctance to participate in online discussion beyond the curriculum time. Reports from Canada seem to suggest that knowledge building activities that are supplemented by relevant field trips can help to sustain the inquiry (see Caswell and Lamon, 1998; Scardamalia, 2002). Field trips tend to generate active discussions when the students try to make connections between what they learn and what they experience. It is one strategy teachers might want to consider.

Another challenge to the teachers is to scaffold students' inquiry. It is not an easy task because the teachers have to provide just enough guidance as to help progress students' inquiry and yet not so much that might make the task too easy and un-motivating for the students. Expertise in scaffolding students' learning can only be mastered through repeated practice. The advantage that Knowledge Forum offers is that the interactions between teachers and students are recorded. These records provide good materials for teachers to reflect on and improve their practice.

Time constraints and student's language skills are two other factors that might affect building a KBC (Chai *et al.*, 2003). Teachers have to be mentally prepared for the time investment necessary for the mastery of this approach. They may need to struggle between fostering deep inquiry and completing the prescribed curriculum. One approach is to do it as an enrichment activity if curriculum restructuring is not feasible. Another problem is student's language skills. Lower primary pupils need more guidance and support in expressing their thoughts and typing their Notes. For students at Secondary level, it might be necessary to impose rules to

discourage the use of acronyms and emotive icons that are popular in the current instant messaging and text messaging culture.

Conclusion

We believe KBC offers an alternative pedagogy for the cultivation of learners who can deal with ideas fluently. It is an ambitious pedagogy and it poses tremendous challenges for the teachers. We understand various obstacles that the teachers might encounter to implement such an approach in a structured curriculum. In summary, we acknowledge that there are real obstacles. However, we see the congruency of the KBC with the ability-driven education philosophy that the Ministry of Education is emphasizing. We therefore encourage teachers to embark on the task of adapting KBC for local contexts so as to push towards achieving the goals of Thinking Schools, Learning Nation.

Implications for Classroom Teachers

- 1. KBC is an approach that aims to foster student-centred learning by encouraging collaborative efforts in generating; discussing, testing and refining ideas.*
- 2. It can be facilitated by using a blended approach of having face-to-face discussions complemented by online discussions with the support of software such as Knowledge Forum.*
- 3. Among many other factors, the success of KBC depends on the principles of:*
 - a. focussing on knowledge understanding rather than creating assignment reports;*
 - b. encouraging ownership of learning by using student-initiated ideas;*
 - c. using collaborative learning to achieve mutual advancement and improvement of ideas; and*
 - d. helping students to build knowledge through research activities that simulate experts in intellectual communities.*
- 4. There are three major phases in forming a Knowledge Building Community in classrooms: Preparation, Knowledge Building and Consolidation.*
- 5. In the Preparation phase, the teacher helps the students to identify appropriate authentic problems that are appropriate and worthwhile for*

the students to pursue. Students can be grouped according to their interests to investigate various sub-problems.

6. In the Knowledge Building phase, the teacher scaffolds the students in improving their ideas through meaningful collaborative work. Online discussion using software like Knowledge Forum can provide a way to integrate discussions within and outside of the classroom.
7. The Consolidation phase brings closure to the research activities with students presenting their learning and findings.

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Influence of Peer Assessment on the Quality of Cooperative Learning: A Pilot Study

Shanti Divaharan and Lourdusamy Atputhasamy

Introduction

The Ministry of Education (MOE), Singapore, is continuously introducing changes in the way students learn in schools. The aims are to engage students in the learning process and to make them more responsible for their own learning. Besides assessing the product or outcome of students' learning, the Ministry is now shifting its attention to monitoring and assessing learning processes of the students. To be in line with the changes in the Singapore education system as well as to meet the new initiatives introduced by MOE in schools, teacher education in the National Institute of Education (NIE), Singapore, is also undergoing various changes in the area of curriculum and assessment. The changes in the curriculum and assessment modes are a move towards providing student teachers with the opportunity and autonomy to take greater responsibility for their learning. In addition to these on-going changes, the authors of this report feel that there should be changes in the way student teachers learn in the Institute to ensure that they have first-hand experience in learning skills, which they can impart when they are in schools as educators. As such, a cooperative learning approach with peer assessment was introduced into the elective module that the authors were teaching.

Benefits of Cooperative Learning

There are many potential benefits of introducing cooperative learning. Some of them are outlined below:

- Cooperative learning helps to develop students' interpersonal skills (Slavin, 1987) such as getting to know and trust team members, communicating

effectively and clearly, providing support and challenging fellow team members and engaging in constructive conflict resolution (Johnson and Johnson, 1994). In addition, these social skills may help students to acquire a sense of social responsibility (Vermette, 1988).

- Beneficial in a multiracial society, as in Singapore, where findings by Pate (1988) suggest that people of different ethnic backgrounds working together on a task, problem or goal, develop positive feelings as well as mutual respect for each other. This would serve well in the long run to promote positive feelings and better understanding among the students from the different ethnic groups.
- In general terms, a cooperative learning environment can provide a positive impact on student achievement (Ream, 1990).

Under specific circumstances, cooperative groups can obtain significantly higher achievement scores as compared to individuals (Sherman and Thomas, 1986). They can also learn materials more effectively (Yager, Johnson and Johnson, 1985).

The experience of being in a cooperative group can also give rise to a feeling of having achieved success, which in turn enhances self-esteem. Thus, students have been found to look forward to coming to school and meeting their group (Slavin, 1980; Slavin, Sharan, Kagan, Hertz-Lazarowitz, Webb and Schmuck, 1985).

Students become active learners who want to contribute and discuss ideas with the teachers (Davidson and O'Leary, 1990).

Students in a cooperative group assist each other to stay on task by discussing the problems that other members in the group are facing (Johnson and Johnson, 1981; Salend and Sonnenschein, 1989).

Cooperative learning gives rise to higher order thinking among students (Slavin, 1987) because the students need to re-organize their thoughts and explain to the other team members.

Some Setbacks to Introducing Cooperative Learning

Although significant benefits arise from incorporating cooperative learning, there are also potential negative outcomes. Some of the negative effects are dysfunctional groups, inability to work together to deliver desired outcomes of the task, as well as a lack of democracy within groups to form a consensus as to how the task should be carried out (Beckman, 1990).

Johnson and Johnson (1999) identify the following factors as hindering group effectiveness and the introduction of cooperative learning in the classroom.

1. *Lack of group maturity* where the members need time and experience to form a cohesive working group.
2. *Uncritically giving one's dominant response* can be a barrier to higher-level reasoning and deeper-level understanding.
3. *Social loafing—hiding in the crowd* happens when individual members reduce their contribution without the rest of the members realizing it.
4. *Free-riding* is when a group member does nothing but enjoys the benefits of the group work.
5. *Motivation losses due to perceived inequity* and the members who are working will reduce their effort in order to make sure that the free-riders within the group do not benefit from the effort they have put in.
6. *Groupthink* happens when the group starts thinking alike just for the sake of avoiding conflicts to reduce vulnerability in the light of the other groups.
7. *Lack of heterogeneity* works against the group's performance as the group may lack a variety of skills among team members to optimize their skills.
8. *Lack of teamwork skills* can work against the team members' ability to work effectively.
9. *Inappropriate group size*, especially large group size, limits the contribution of each member and makes the group structure complex.

However, in view of the many advantages cited by researchers, there is now a strong movement to use cooperative learning in education. At NIE, more and more courses engage students in cooperative learning tasks. The authors also use cooperative learning strategies in the delivery of their courses.

Peer Assessment in Cooperative Learning

Research also cites many benefits of peer assessment which involves course-mates assessing the contribution of each other towards a learning task. Some of the benefits would be that peer assessment enhances the development of critical faculties (Searby and Ewers, 1997; Stainer, 1997); promotes students' learning and encourages cooperative learning as opposed to competitive

learning (Orsmond, Merry and Reiling, 1996; Lejk and Wyvill, 2001). The perception of students engaged in cooperative learning using peer assessment indicated that it had encouraged them to participate actively and that it was an interesting experience (Lourdasamy and Divaharan, 2000). In fact, the students expect their peers to take the group activity seriously and thus develop trust in their group members, in addition to the rewarding experience of cooperative learning with peer assessment (Purchase, 2000).

One of the concerns of introducing cooperative group-work in institutes of higher education or in schools is the students' concern for the level of fairness of assessment as all group members are generally awarded the same mark (Conway, Kember, Sivan and Wu, 1993). In addition, Johnson and Johnson (1999) highlight that the most significant motivating forces for students are those that increase their competencies in a way that benefits those that they care about. This can be encouraged by (i) structuring positive interdependence among students; (ii) involving students in the learning and assessment processes; and (iii) ensuring that the assessment procedure is organized in a way that the data collected may be used for final grading. This is an issue that needs to be addressed to ensure that members of a group are rewarded fairly based on their contribution instead of being free-riders and getting rewarded for the efforts put in by other team members.

One way of ensuring student involvement is by rewarding their participation and contribution (Yueh and Alessi, 1988). Taking this into consideration, the authors decided to include peer assessment to reward the students for their effort. Besides being rewarding, the authors agree with Conway *et al.* (1993), Goldfinch (1994), and Freeman (1995) that peer assessment is one way of controlling free-riders in group-related assessment task. On the other hand, it has been found that peer assessment gives rise to students feeling discomfort as they perceived it as criticizing their friends (William, 1992). Students in William's experiment suggested that the situation could be improved by providing streamlined marking guidelines.

In summary, Falchikov (1995), Keaten and Richardson (1993), and Pond, Ul-Haq and Wade (1995) claim that there are a number of advantages to introducing peer assessment. They are:

1. the students are motivated and accountable for doing group task before class;

2. peer assessment raises awareness of the importance of group dynamics;
3. peer assessment also reduces the presence of free-rider members within groups considerably.

The decision to go ahead and introduce peer assessment for cooperative learning tasks also stems from the fact that people like to be recognized for their achievements, a fact which Yueh and Alessi (1988) claim can help foster self-esteem. Student teachers need to know that each of them, in their own unique way, can contribute to the success of the group. This would help the student teachers realize their potential. The authors considered this suggestion in the design of the intra-group peer assessment and this was implemented for the student teachers for this elective module at NIE.

Method

It was noticed by the authors during the previous teaching of the module that the participation of student teachers in cooperative group-tutorial work varied as some put in a lot of effort while others did the minimum judged by their participation in class as well as through our personal interaction with the student teachers. The success element of cooperative group work depends on positive interdependence and individual accountability. For positive interdependence, there must be awareness among group members that their success is linked to that of others. For individual accountability, each group member has to be accountable to do his/her part and help others complete the group task successfully.

Therefore, it was decided for the module that the authors were teaching, the student teachers would be assessed for participation in tutorial preparation and presentation. Using this approach, the authors hoped to engage the student teachers fully in the tutorial activities. The authors also decided to involve the student teachers in the assessment process for both the group presentations (inter-group product evaluation) as well as the contribution of fellow group members to the success of the group's work (intra-group process evaluation). This is based on the assumption that since they know what each group member has done and contributed to the task, they are in the best position to assess. This procedure is a departure from the norm in assessment practices at NIE where students are not involved in assessing peers' work. Though this procedure is quite widely

practised in North America and Europe, we were not very sure how our students would receive it.

The aim of this exercise was to find out whether the introduction of peer assessment improved the quality of participation in cooperative learning. This was assessed by the perceptions of the trainee teachers in this course.

Procedure

Sixty-nine Post-Graduate Diploma in Education (PGDE) students who enrolled for the elective module "Instructional Strategies and Learning Effectiveness" participated in this exercise. The PGDE is a 1-year professional training programme.

At the beginning of the course, the authors briefed the students on the procedure for peer assessment with respect to the cooperative work they would be doing for the tutorials. They were also told that only 20% of the course assessment marks would be involved in this process. The rest of the assessment would be normal essay assignments evaluated by their tutors. Their consent was obtained and the student teachers indicated willingness to try and provide feedback.

For this exercise the students were divided into sub-groups of five in the tutorial groups. They were allowed to form their own groups. The rationale for this is, on some occasions, they were also required to meet outside class hours to prepare for the tutorial. They were assigned five tutorial tasks that were related to the theoretical input in lectures. The student teachers were required to work in their groups to prepare for class presentations on the assigned tasks.

Two forms of peer assessment were operational during the tutorial presentation. First, the other groups assessed each group's presentation (inter-group product evaluation) based on evaluation criteria for each task. The tutor also evaluated the presentations independently. The correlation between the tutors' scores and the mean peer groups' scores was examined by calculating the Pearson correlation coefficient. There is a fairly high correlation between the two sets of marks ($r = 0.78$) in a previous study, significant at the 0.001 level. (Lourdusamy and Divaharan, 2000). Second, students assessed the contribution of their group members towards the tutorial task collectively through negotiation (intra-group process evaluation). An

assessment guide and a scoring rubric were provided for this purpose (see Appendix).

At the end of the course the score sheets of the groups were collected and the mark for each student was computed. The students were also asked to express their views and feelings about the peer assessment exercise on a specially prepared form. They did not relate this in any way to the course assessment but expressed their views about their experiences with this procedure. The students were aware that their comments may be used by their tutors for publication purposes.

Data Analysis

The views expressed in the feedback forms were analyzed qualitatively to get an impression of the student teachers' experience with peer assessment and the effect of peer assessment on the quality of their participation in cooperative work by examining the comments made by student teachers.

Results and Discussion

All views expressed here are based on the qualitative feedback obtained from the student teachers who participated in the study. In general, the authors found that the student teachers were positive about cooperative group-work for tutorial tasks and the use of peer assessment as a monitoring strategy. The views indicated that peer assessment helped to encourage and accentuate the benefits of cooperative group work for the students involved in this study. Students perceived the task of assessing the group presentations of their peers as interesting, acceptable and a task in which they would like to be involved in. However, they also found the task difficult and sometimes felt awkward when they had to judge the performance of their peers. This resonates with William's (1992) study. A number of student teachers suggested that intra-group peer assessment of contributions from fellow group members should be done in confidence and not openly.

On the whole, students' views were positive. Student teachers felt that peer assessment had motivated them to work better in their groups. In addition, it provided them with a sense of achievement as well as to be more responsible for their own learning, thereby developing further their higher-order thinking skills by being more critical of themselves and their peers.

Some student teachers found it to be a fair system of assessment. They felt that the system encouraged them to work cooperatively and helped to improve interpersonal skills. It helped them to stay focused on the common goal set by the group members and to stay on task.

Conclusion

The aim of this study was to assess the influence of peer assessment as a means to improve the quality of participation in cooperative learning. The views expressed by the student teachers indicate that their involvement in peer assessment encouraged them to participate actively in the tutorial activities. Also, student teachers perceived peer assessment of group presentations as non-threatening, interesting and acceptable. However, the trainee teachers found participating in the assessment of fellow group members in the face-to-face intra-group assessment of their peers awkward. They felt that they were restricted in a face-to-face situation to give unbiased assessment.

With the introduction of cooperative learning together with peer assessment, the student teachers perceived that they had developed several learning skills. Their perceptions and views suggest that they were able to develop their communication skills with their group members by providing support as well as challenging their team members to realize their potential. In addition, the students felt a sense of responsibility working in a group. With cooperative learning, the trainee teachers felt that they were able to set common goals and to be on task through the help of fellow group members who reminded each other of the target goal.

As mentioned earlier, the authors would like to point out that this is not a rigorously designed experimental study but a report of an attempt by the authors to introduce peer assessment in a context where it is not normal practice. Our experience with peer assessment for cooperative work suggests that it encouraged student teachers' participation and the quality of work presented in the class. A carefully designed study may throw more light onto the usefulness of peer assessment to enhance the participation and quality of involvement in cooperative work with wider empirical evidence.

Implications

- Cooperative learning can be encouraged through a system of rewarding students for their participation and contribution. One way this can be achieved is through peer assessment.
- Peer assessment motivates students and makes them more accountable for their contributions to group work. In addition to raising awareness of group dynamics, it reduces the presence of free-rider members within groups. The findings reported in this article suggest possible applications in secondary schools, Junior Colleges and higher learning institutes, where students are mature enough to take responsibility for their own learning.
- It is suggested that intra-group assessment be done as a confidential exercise.

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Appendix

Criteria for assessment

- The person attended out-of-class meetings held for discussing the tutorial assignments
- The person actively participated during the out-of-class tutorial discussions
- The person came prepared for the tutorial discussions
- The person actively participates during in-class group discussions
- The person actively contributes ideas for the completion of the tutorial assignments
- The person showed a genuine concern for both the task and the welfare of the group
- The person played a part in developing inputs from the other team members for the successful completion of the tutorial assignments

Scoring Rubric

10–9	Outstanding contribution and leadership
8.5–7	Superior contribution
6.5–5	Moderate contribution
4.5–3	Occasional contribution
2.5–1	Present but no contribution

When Academics Collaborate: The Value of Learning Journals

Jim Murphy

Learning journals are a way to engage learners in critical self-reflection. The promise is the assumption that their use supports learning by helping learners to positively reconstruct their understanding in ways desired by their teacher. This paper offers evidence from an analysis of 33 journals written over 3 months by 14 academics from a variety of disciplines. Based on the content produced and evaluation comments, the paper concludes with an assessment of the value of this collaborative learning strategy for academic staff development—and for the academics themselves.

Introduction

Collaboration is a teacher philosophy of interaction that aims to achieve a set goal by pairing or grouping learners in class physically, or more recently, out of class using ICT. The goal may be set either by the teacher or the learners themselves. A joint responsibility then exists to cooperate to achieve success with any learning task (cf. Slavin, 1989).

Learning journals are known also as logs or diaries. Some years ago, Boud, Keogh and Walker (1985) encapsulated the rationale for their use in the title of their book: *Reflection: Turning Experience into Learning*. Journals are increasingly popular and used in a variety of circumstances for many reasons (Jolly, 1999; Moon, 1999; Thorpe, 2000). At NIE, as in other teacher education institutions, they are sometimes used in undergraduate and post-graduate diploma training programmes.

This paper is not directly concerned with trainee development. Rather, it assesses this strategy from my perspective as facilitator in modules

concerned with lecturers' professional development. Here we look at the writing of 14 academics from a variety of disciplines engaged as learners in academic staff development in pursuit of a *Post-Graduate Diploma in Higher Education* (PGDHE) offered at the *Nanyang Technological University* (cf. Murphy, 2002). Extracts from diaries that follow are chosen to illustrate how journals might be used collaboratively to assist personal and group learning.

Two things come through strongly in these extracts. First is that learning is an internal process strongly affected by the context and collaboration with others (co-learners and teacher). Second, learning journals and the way they are used demonstrate three levels of collaboration: learner to learner, learner to teacher and teacher to learner.

Journal Rationale, Process and Expectations

From the perspective of the learner the most sophisticated conception of "learning" is to change as a person (Marton, Dall'Alba and Beaty, 1993). A person may be satisfied she/he has personally changed as an outcome of learning but how can a learner demonstrate that to a teacher or facilitator? How might these academics?

To address these puzzles I required a learning journal as part of the assessment for each module. The goal was to see if, by using critical self-reflection, my colleagues who were my students, could transform their academic experience and experience of the modules into learning outcomes using a collaborative approach. What did they think about the module goals, process and outcomes? What impact was there on their thinking and practice?

An evaluation is a formal way to get such information but I have found journals to be a superior form of data collection. Informal journal writing gets to the nub of matters often in an entertaining and bold way. I thought it would be interesting for us both, plus be insightful for me to help improve the modules I teach. In other words, we would engage in a form of collaborative learning.

My expectations were that each colleague would record their preparation for and content of each 3-hour class, post-class actions, and observation and reflection on these matters. A template was given to allow them to

do this. We then began each class with a 10-minute discussion of what they wished to share from their writing sometimes with a partner and other times with two colleagues to maximize interaction. After the discussion appeared to run its course I asked, "Assuming permission from your friend, who has heard something interesting that you think the class could benefit from?"

My expectations were that the learners would record what went on, what they thought of it, and how this impacted on their thinking and behaviour, if at all. In addition, as this was a pass/fail module I expected my colleagues to be mindful of the three assessment criteria of this piece of work. I desired them to be thorough (recording what they did in class and independently after), observant (of the utility of things they had done or thought about) and critically reflective (in terms of their theory and practice). Let us look at the journal outcomes. How collaborative were they?

Content and Learning Outcomes

My analysis is based on 33 journals prepared over the 3 months I met my classes. The analysis is to see if the writing's outcomes matched my expectations, what my colleagues purported to learn and what I learned in collaboration with them. Let us first look at comments in terms of the criteria upon which I judged the writing — thoroughness, an observant attitude and critically reflective disposition. Extracts that follow illustrate how learners met these assessment criteria. Collaborative statements are italicized.

Thorough

With few exceptions from illness or absence, journal keepers all maintained a thorough record. In Scholarship in Higher Education the page range was 3–16 and the average was 8. In Learning & Teaching in Higher Education the range was 3–15 with an average of 6. In Research Supervision it was 4–7 with an average of 5 pages. By the time this final module rolled around 10 months after the start participants appeared to have "module fatigue". Perhaps their output declined from too much of a good thing. It was not a problem for them to record what they did out of class (e.g. preparatory reading), what we did in class (questions and issues discussed) and what

they did after (followed-up some idea by reading another article). Here is a sample of an interior designer's comment on preparatory reading:

- We were given a couple of articles to choose from to prepare for discussion in our class this week. I decided on ... "Are Professors Professional?" Fascinating because I had thought the answer would have been pretty obvious. I mean, surely the work performed by academics more than qualifies us to earn this status, doesn't it? What is there to debate about in the first place? As I read through the article, it becomes apparent my understanding of professionalism has been misguided. Criteria associated with professional life, when examined against what academics and other professionals do, appear inconsistent. Take for instance how professors are not called professors once they leave the academic profession, but a doctor or lawyer would always be recognized as one regardless whether he or she practices or not ... But here's another thing that fascinates me. How an article that I spent reading an hour before class was extremely thought-provoking and *helped me engage with others*. I can't wait to read the other article. As soon as I find the time that is!

Observant

As could be expected submissions showed academics are keen observers. A brief example is with regard how the classes were conducted. A lawyer noted:

- Dr M adopted a discussion-style approach in his teaching, varying short didactic periods, pair work and different sized buzz groups. I expected most postgraduate courses would be conducted wholly in a didactic style so I was very pleasantly surprised. I enjoy this style of learning—much more active than I thought. The *discussions gave me a chance to critically reflect on the nature of my work* and environment and how these can be "powerful forces" that influence my behaviour.

Critically Reflective

Sometimes things in class led to comments on the work environment and the nature of teaching.

- Engineer: A few weeks ago I didn't know that teaching theories existed. This is tragic because for a whole year I was teaching by instinct, with no

idea whether I was contributing positively to my students' learning. What compounds this tragedy even more is the *knowledge that I was not alone*. In these few weeks I have not only become aware of this store of literature, but have refined and even altered completely my teaching style in accordance with these theories. But this has not been easy and further change will be even less simple to implement as the theory I wish to comply with will almost certainly be at odds with what is "officially required" ... in only this short time the knowledge of these theories has effected a conceptual change in my view of teaching within higher education, in particular how I can be a more professional teacher by being scholarly.

- Lawyer: For homework we collected teaching problems faced by our colleagues. In class we compared them with those faced by teachers at *McMaster University, Canada*. *We found them to be similar* and concluded that teachers, students and disciplines were much the same worldwide. These questions also appeared to be questions I have asked myself at one time or another during my short span of 5 years as a teacher. The questions seemed rather universal yet I feel that teachers of Asian students might face more of certain types of problems as compared with teachers of Western or other culture students and vice versa. For example, I face problems of having non-participation and shy students who are afraid to argue and are of the view that asking the teacher too many questions or speaking up may come across as disrespectful to the teacher. I wonder if this might be the result of the way students have been trained in primary and secondary schools in Singapore, the Singapore "obedient" culture, or the Asian/Chinese culture? Perhaps all are contributing factors.

Finally, students offered *personal comments* derived from class discussion:

- Fashion designer: It's interesting to know that people are driven differently. *X said that* when teaching his main aim is to please the students because they influence his benefits/bonus by giving feedback on his performance. (That's indeed weird!) *Y said that* he has changed his attitude and now does not care a damn about management. His main focus is "what is best for the students", and if even a single student appreciates his efforts he feels *good!* (That's brave!) On hearing this someone asked him if he is married with a family. (Of course not!) *Someone also said that*

he feels responsible for shaping students' futures and tries to impart knowledge that will benefit them in the real world. (I like that).

- *Nurse educator: The anxiety I had prior this course was unfounded. It was a warm welcome by several NIE Deans. Our class consists of lecturers from NTU, NIE, NAFA, Lasalle and two Polytechnics. A refreshing mix of people from very diverse backgrounds. After listening to others the major problems we are all facing seem to be pretty much the same: (1) lecturing without professional teaching training, and (2) adapting to the culture of Singapore's tertiary institutions. The other students are very open about their abilities and weaknesses and Dr M seems to be a competent and experienced facilitator. After just one meeting I am now confident that this course will benefit me.*

Having a critical perspective that allows perceptive and insightful comment or determinations is fine but it is the learning that is most crucial.

Learning and the Utility of Journals

Most writing matched my expectations in terms of both quantity and quality but what did my colleagues purport to learn together? Learning described below is both conceptual and practical. First, changes to conceptual understanding.

- *Lawyer: We're halfway through the Certificate course, time flies! Seems like only yesterday that I walked into NIE for the first time. I suppose time flew by for me because I was enjoying my learning experience. The discussions and conversations with classmates, the different teaching methods used, the chance to bury myself in books and articles on educational issues, the new discovery about my own thinking and teaching style — all these had a big impact on me these past weeks.*

Multimedia artist: The end of this module has set me on a course of thought and action at the same time. I realize now the importance of ALAR (Action Learning and Action Research) in developing our profession ... It brought about a colleague's analogy that the Approaches to Teaching Inventory (ATI) helps us see where we are on our map and ALAR is a compass to our destination on a voyage of self-discovery ... I conclude now that for every cross-road I may face there is always a solution if we recognize our position on this map ... This entire module

has left me reeling in excitement as at last I now recognise the pathway to being a scholarly teacher.

- Video artist: I have to put this down in my learning journal as this has been bothering me—filling and fuelling my mind, since the last session. And it came from a rather unexpected source—not from Jim nor the excellent readings—but my classmate from *Lasalle*. In *sharing her journal entries from our last meeting at the start of class*, she made a point I found very enlightening. She advised we should judge the success of our teaching *not* by how well the good students perform, but how much the so-called "poorer" ones improve. It struck like a thunderbolt. This insight is so important for me.

Conceptual learning becomes really valuable if it becomes practical. Sometimes comments were about the *use of ideas* talked about in class:

- Accountant: *Class starts with a exchange of notes in learning journal* between participants. Helps me to understand what and how other people do in and after class. Also gives me some ideas of what I should do in my own learning journal or how I might use it in my own teaching.
- Lawyer: If teachers' conceptions of teaching and/or learning are related to their approaches to teaching, the task of improving teaching may have to focus more on changing *how* academic staff conceive of teaching and learning rather than on teaching strategies. I note our poly staff development programs focus on strategies. I've witnessed strong resistance from some older colleagues when they were "forced" to adopt the problem-based learning (PBL) approach. They attended numerous training on strategies of PBL even though they never really believed the underlying benefit of encouraging deep learning using a student-centred approach. Perhaps my colleagues needed first to change their *corzception* of teaching and learning before such strategies were introduced.
- Psychologist: Today's session and the readings on the "scholarship of teaching" have been helpful and enlightening. My role predominantly has been limited by what I have to do daily—prepare my package of knowledge and skills and present these to students. I have not given the four forms of scholarship of teaching equal weight. Upon reflection I realize I have to make a more conscious effort to incorporate these four faces of scholarship of teaching. It is important to be open to new learning

to allow myself to grow and change, not just as a scholar but also as a human being embarking on the journey of life-long education.

Some colleagues wrote about *how* the classes were conducted. This is a practical issue for they might adopt something they have experienced for their own teaching:

- Journalist: There are two ways that I'm learning here. First, I'm taking in the information conveyed to us. Second, I'm also taking careful note of *how* Jim conveys it. Sometimes I find it hard to fill a two-hour class with my students. I guess I have to look at the way he blocks out a larger three-hour period and structures it with different activities in order to not only convey the material but also keep the interest level up.
- Interior designer: It was fairly amusing as *the class started to share their various experiences* we had as research students. One classmate, for instance, lamented his supervisor has no time for him. Another talked about his "turbulent" time—how he went through phases of "fun", "hiding" (from his supervisor) to "panic". Supervisors too have their fair share of stories. One complained about restrictions—how, for instance, some research topics are rejected, as they are deemed inappropriate or sensitive. Another bemoaned the pressure of admissions and deliveries (since more research students often equates to more funding for the institution). Others felt supervisors are sometimes "coerced into accepting students, without being necessary the most qualified person for the job ... As we started to share our experiences as research students and supervisors, it became apparent to us that the level of research supervision lacks support, standards or consistency. *Sharing experience has great advantages. I felt somewhat consoled by the end of the day: I am not alone in feeling inadequate after all!*
- Lawyer: We learned today that there are many facets to students' learning—conceptions, approaches, orientations, intentions and strategies. To come to grips with this Dr M conducted his class by using a peer teaching method. I found this a powerful way of learning. It certainly encourages deep learning for the peer tutors. When the peer tutors move in the groups to teach, their own learning of the content is reinforced and doubts are clarified when they are forced to answer questions posed by the tutees. As the "tutors" become more experienced with each group

they visit, they progress in their teaching by learning to be succinct and focus on the main points. We actually learned without a "teacher". I have since used this method to conduct my tutorial classes and students enjoyed it. The learning was also improved.

- *Teacher educator: As mature-aged students from diverse fields sharing a common ground — teaching — we are keen to share and discuss issues we face in our profession. The organization of groups to that end was very flexible and productive. It provided the opportunity for social interaction and importantly diversity in discussion. As mature-aged students from varied professional fields, flexibility with no constraints led to a fruitful discussion. I felt that immediately we were put at ease to express "unguarded opinions. I feel this atmosphere is vital for the coming discussions and our learning.*

Having seen what academics chose to write about and how they did it, what might we learn from this about collaboration?

Conclusion

I designed each module with two main goals. First, I wanted my colleagues to be confronted with new knowledge, then use their process skills and appraise its merit for their diverse needs. Second, I wanted them use their critical dispositions to build a new personal understanding with the unspoken objective that this would potentially change their practice as discipline teachers.

Journal extracts show me that they account for new knowledge and comment on it. When they process they "play" with this knowledge and "kick it around" in order to make sense of it. They sometimes comment critically and reflectively on themselves or others based on their experience. Then they project how they might use their new understanding. I saw an increase in subject matter interest, critically reflective thinking, and suggestions of how new understanding might be used or actually is being used. Reading their journals showed me how collaborative discussions one-on-one with me or their colleagues, plus small group work, assisted in building their understanding. Finally, I gained ideas of how I might better organize things next time. Without these journals I would have no knowledge of any of these matters.

In many disciplines learning journals are a possible assessment device, especially at the postgraduate level. Experience reported here shows there are well-founded reasons why they are recommended for both learner and teacher. Can you use learning journals in your teaching? If you choose to try I recommend:

- specifying the teacher's goal in using them;
- specifying objectives for learners;
- offering a template for guidance;
- setting aside time in class to share journal entries; and
- assessing journal writing by offering written comments.

You *may* find that establishing journal writing is not easy. But you *will* find that your effort is worthwhile for the new insights it gives you into student learning. You will also discover it allows new opportunities for collaborative learning that may not exist without building journals into your module design.

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Collaborative Learning in Physical Education through the Use of IT

John Tan and Michael Koh

Introduction

One of the major aims of Physical Education (PE) is to improve human performance in physical activities through the acquisition of motor skills. At the National Institute of Education (NIE), Singapore, PE teachers undergo a 2-year training programme to develop both pedagogical and content knowledge of a wide variety of motor skills. PE teachers' understanding of the science underpinning movements will influence the extent to which they can help students successfully perform a motor skill. Although PE is defined as the process of educating through the medium of physical activities (Siedentop, 1990), physical activities are not the exclusive learning medium. To this end, we advocate the use of information technology (IT) as a means of facilitating the teaching of PE. This may be relatively new but not far-fetched.

The use of IT in PE may not only enhance the learning of motor skills but may also revolutionize the process of learning, moving from the traditional concept of learning where teachers impart skills to passive learners, to one where learners are required to be more active and collaborative. This article introduces two approaches to incorporating IT in PE teacher education, specifically in the learning of gymnastics. The first approach involves the use of video and computer technology in daily, face-to-face practical lessons; the second incorporates this technology into a form of "blended e-learning.

PE teachers are required to identify flaws in technique and use appropriate corrective actions or structure progressions in skill learning that should be based on sound mechanical principles rather than guesswork (Hay, 1993).

Typically, verbal feedback is the predominant means of intervention in the teaching of motor skills (Magill, 1993). This would require teachers to encode a physical performance into words and the students to decode the verbal feedback into physical performance. But this mode of communication can result in disappointing outcomes, such as a misunderstanding of the feedback given.

Motor learning researchers (McCullagh and Caird, 1990; Wood, Gallagher, Martino and Ross, 1992) have shown that demonstrations, pictures or other visual models that provide information about a movement are more effective than the use of only verbal input in teaching a new pattern of coordination. With the coming of the IT age, teachers are able to communicate vividly, conveniently, as well as accurately the quality of a physical performance via video and computer technology. In fact, video is such an excellent visualization tool that teachers can use it to facilitate the learning process by showing video clips as often as necessary thus enabling learners to encode and memorize relevant movements more easily. It is of no surprise that Knudson and Morrison (2002) asserted that video is an effective way of increasing observational ability. Fenrich (1997) also noted that video can illustrate realistic representations of procedures and processes in order to gain and focus learners' attention. Basically, learners are more motivated to view their own performances for a variety of reasons. But from the skill learning perspective, viewing one's own performance is the most realistic form of feedback. In physical activities, performers would never have a chance to view their own performances unless they were recorded. Video not only provides good recordings of performances, it is also allows learners to focus on key movements as recorded motions can be replayed at a slower pace or be "paused" for clearer viewing.

In designing the e-learning module, cognitive information processing (Driscoll, 2000) and constructivist (Jonassen, 1994) pedagogical perspectives were used. Using information processing theory, emphasis was placed on focusing learners' attention on important information and providing learning activities that engaged them in rehearsal or elaboration of information. Reinforcement through practice and feedback were provided by means of a pop-up quiz. Through constructivism, learners actively engaged and constructed meaning not only from content provided on the Web but also from collaborative dialogue with others.

In order to take advantage of IT, the following questions arise: How can this technology be used effectively in the teaching and learning of motor skills? How effective is this approach in physical education classes? The following section describes an approach that incorporates the use of video and computer technology in the teaching of gymnastic skills to trainee PE teachers.

Approach 1: Video and Computer Technology

A program called "Silicon-Coach was used to capture and manipulate the gymnastic performances. This software allows two video clips to be replayed simultaneously in order to facilitate the comparison of different performances (usually expert's versus learner's). It also provides a means of quantifying physical performances with measured angles and distances by mere "clicks" of the mouse. The use of this technology in teaching and learning movement skills was explored in a gymnastics module for PE trainee teachers where the video computer technology was incorporated as a teaching and learning aid. In each class, after the instructor had introduced a new gymnastic skill and some progressions to attaining the skill, the trainee teachers were required to work collaboratively. Specifically, they were divided into small groups in which each member was tasked with a variety of jobs like recording, performing motor skills, capturing images, manipulating the computer software and most of all, providing information or opinions when analysing and suggesting ways to improve performances.

Each group was equipped with a Panasonic digital video camera recorder (Model AGEZ30), set on a tripod to record individual physical performances for a variety of gymnastic skills. The video camera recorder was connected to an IBM thinkpad computer (Model 2656) by a firewire cable through an IEEE 1394 PC card. This setup enabled the direct recording of video clips onto the computer's hard-disk. Figure 1 illustrates a typical setup of the video camera to the computer.

The video images can be presented in a split screen that allows two separate video clips to be viewed simultaneously as shown in Fig. 2. The trainee teachers were able to compare the movement features of one performance visually and repeatedly as required. For example, in Fig. 2, trainee teachers were able to compare the magnitude of the hip extensions of the two neck-spring performances.



Fig. 1. Setup of the video camera connected to the computer.



Fig. 2. Split screen facility that allows the comparison of movement.



Fig. 3. Stick-figure overlay highlighting movement attributes and quantifying joint movement

The software also allowed the drawing of stick-figure overlays as shown in Fig. 3. This feature permits the analyst to point out key attributes of a recorded movement to the performer or an observer. For instance, in Fig. 3, a stick figure representation of the body shape denoted by a white line is overlaid on the picture to help the observer focus on a key attribute, namely the feet position in relation to the hips in the headspring vault. The software also provides quantitative measurements such as angles and distances of limb segments on the video images. In Fig. 3, the number indicates that the hip flexion angle is 73 degrees. To the observer, it is an indicator that the feet are below the hips, the desired position for the skill in question.

Responses to the Video and Computer Technology

Using a five-point Likert Scale (1—strongly disagree; 5—strongly agree), the trainees were surveyed for their responses on three aspects of the use of video and computer technology in the teaching and learning of gymnastic skills. These aspects were: (a) demonstration and learning of skills; (b) enhancing observational ability; and (c) means of feedback.

We found that our learners were very enthusiastic about using video computer technology. They noted that its use was effective in providing visual demonstrations; an average score of 4.6 was noted from the survey. With an average score of 4.5, they also found that the technology was effective in providing feedback. Finally, they recorded an average score of 4.5 for the enhancement of their observational skills. In short, they found that using this technology not only enhanced their learning of gymnastic skills but also their skill analysis capabilities and competencies in providing effective feedback.

Commentary on the Video and Computer Technology

From this exploration we found that the trainees were more motivated to learn gymnastics. In contrast with passive traditional approaches, they were more willing to experiment with different interventions to the performances probably because they were keen to see the results of their actions on screen.

Approach 2: e-Learning in Gymnastics

Because gymnastics is a physical activity, the online learning medium may seem alien. However, specific features of this learning medium (such as anytime, anywhere learning, hypermedia access to recently updated information based on related ideas, ease of use, discussion forums and synchronous "chat" facilities that go beyond classroom boundaries; Tan and Hung, 2001), provided the impetus to utilize these features to enhance the students' knowledge base in gymnastics. The following section describes a pioneering attempt to incorporate the use of a "blended e-learning approach in the teaching of a module in gymnastics.

During face-to-face practical sessions, animations and video footage of gymnastic performances were accessed wirelessly within the gymnasium. The instructor used these graphic presentations to highlight specific phases of movement and their critical attributes. The video and animation, in conjunction with the instructor's verbal instructions, were used to enhance explanations and provide effective guidance to the learning of the task. The timely display of video and animation (or "just in time" instruction) would definitely assist the learners tremendously in attending to specific and relevant information (Fenrich, 1997). A computer screen presentation of a video clip used by learners in the module is shown in Fig. 4.

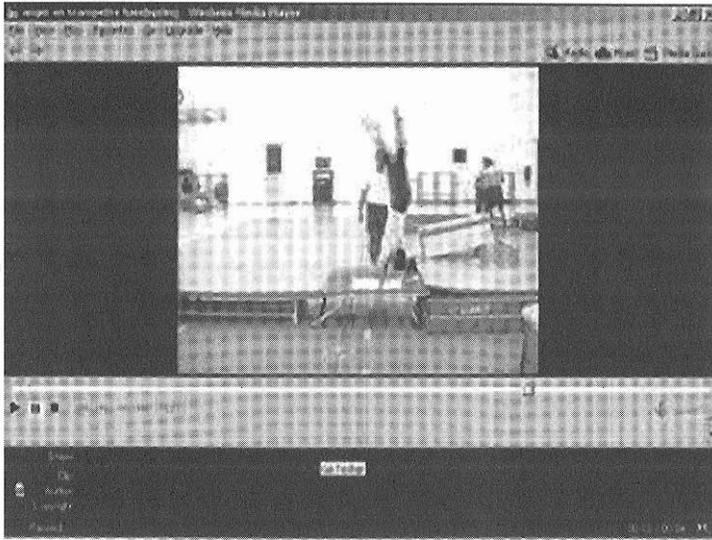


Fig. 4. Computer screen illustration on the video in e-Learning module

An asynchronous discussion forum is a feature of e-learning created to facilitate individual and collaborative learning, as well as to promote critical and reflective thought. The discussion forum used provided structured communications (Hannafin, 2001). They were incorporated throughout the hybrid online course and were premised on learner-centred principles (APA, 1997). Online discussions promote opportunities for challenging, debating and refining ideas (Bong and Cunningham, 1998) among the learners, where the learner actively engages and constructs meaning not only from content provided on the Web but also from collaborative dialogue with others.

The online discussion allowed the trainees to post their answers, to review and comment on each other's answers and to post questions. For example, in response to a question on what rectification is required to improve vaulting performance, learners could watch a video clip of the vault and respond accordingly. An example of a thread of discussion that occurred in the module which evolved from agreement, to making conceptual inputs in explaining the movement and making suggestions for improvement, is as illustrated below:

Student A: the impact phase is the most important aspect to look at if the subject's performance was to be improved. This is because

I felt that he did the movement correctly until the impact phase. He had good height from the board take-off phase, giving him good linear and rotational momentum which enabled him to get into a good preflight phase in which he approached the vaulting table at quite a steep angle. However, upon impact, his hands were bent, and remained bent even as his body was at the vertical. It can also be seen that his shoulders have gone past his hands while contact is still being made with the vaulting table, thus constituting rolling.

Student B: I agree with Student A that the subject has a good technique during the takeoff phase. He has ensured that the impact is a relatively short one to enable him to produce sufficient force to get to the preflight phase ... Personally, I also agree that the takeoff, preflight, impact, postflight and landing are clearly visible in the video. However, it would be more accurate to judge the overall vault had the hurdle step and the run up been shown.

Typically, such discussions demonstrated critical and reflective thought as a result of collaborative effort. These discussions were extended to the face-to-face practical sessions so that hands-on practice could be used to reinforce the understanding of concepts and to enable learners to apply them in authentic situations.

Response to the e-Learning Approach

Trainee teachers completed the online cum practical (hybrid) gymnastics module over 9 weeks. For the online module, access was via a password-protected website through a learning management system known as Blackboard^a. For the discussion forum, they are assigned into groups of four with each person taking leadership in initiating and ending a specific forum. Four topics are presented for discussion. At the end of each module, they are asked to complete a 10-item attitude survey questionnaire. The survey questions were aimed at obtaining feedback on aspects of the online module using a five-point Likert Scale (1—strongly disagree; 5—strongly agree). These aspects were: adequacy of coverage, perception of knowledge gained and reaction to module design.

In terms of content coverage of the module, the response was highly favourable; an average score of 4.1 was noted in the survey. Participants indicated that the information presented was useful and helped them to understand the activities during the practical sessions. The participants also indicated that the use of pictures and video clips enhanced their understanding of the content. With regard to online discussions, participants generally agreed that the forums enabled them to share ideas, enhanced their understanding of the pedagogical content and encouraged them to apply concepts learnt in the course. For the perception of knowledge gained from the use of this e-learning process, the computed score from the survey was 3.8. The trainee teachers scored an average of 4.1 for the design of the module. However, most were neutral in their opinion with regard to a reasonable level of personal effort spent participating in the discussion forums. This indicated that student interest in terms of online learning is an area that needs more attention and encouragement.

Commentary on the e-Learning Approach

In using e-learning, with all its features, learners are encouraged to seek answers to their questions collaboratively. When an answer to a question is given, or the meaning individualized, the confidence of the learner would increase and in turn reduce the dependency on the teacher at the same time. This medium of instruction can be a useful tool in developing individual abilities to becoming lifelong and independent learners. For many of the trainees, online education is a new phenomenon. With time, a paradigm shift may be realized among learners, as they come to accept online instruction as an educational tool to supplement the practical aspects of any sports module, let alone gymnastics.

Conclusion

Our approaches received overwhelming endorsement from the students. Their responses indicated that using video and computer technology in teaching and learning motor skills was effective. Moreover, it was effective not only in acquiring the gymnastic skills, but also in enhancing observational abilities and skill analysis capabilities. We suggest that pupils in schools be taught to observe and correct each other's techniques. PE teachers should venture into incorporating video computer technology in teaching motor skills. They could further capitalize on the potential of video as a

means of feedback and as a tool for analysis. We also recommend that PE practitioners consider using e-learning as a facility to supplement PE programmes. Hung, Tan, Wong and Cheah (2003) commented that the vast potential of IT is waiting to be harnessed.

The use of IT in PE also predisposes the learning process to be one that is more learner-centred. It also facilitates collaborative work and moves away from the traditional passive learning approach. PE teachers who integrate video and computer technology into e-learning will not only improve their instruction but will also enhance the professional image in teaching movement skills.

Implications

- Care must be taken when using e-learning to make sure that it is not merely an "information dump" site.
- Discussion forums should be structured to avoid a "free for all" like in chat rooms. Specifically, questions posed should progressively require higher-order thinking skills that promote critical and reflective thought.
- Apply cueing strategies in visuals (by means of annotations or pop-up quizzes) to facilitate information processing.
- The use of modern video and computer technology within PE lessons in school requires capital investment. Therefore, a commitment must be made by PE practitioners to take advantage of the technology and not regard it as a novelty. Teachers must plan to integrate the use of such equipment to meet the affective aspects of the learning outcomes in PE lessons. This can be achieved effectively through collaborative work.
- IT is a tool that has the potential to facilitate the inculcation of independent and lifelong learning skills. However, teachers must make a paradigm shift to use it. Top-management support, as well as technical support, is critical for this endeavour.

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Developing Discussion Skills for Cooperative Learning Tasks

Kirsten Schaezel

Introduction

Today, educational institutions all over the world are being criticized because they do not produce students who can think in the way required in many jobs. What characterizes this way of thinking? Students, and potential employees, need to be able to examine ideas logically, socially, emotionally; to think of new ideas and explore them; to create alternative possibilities when problem-solving and to think in "webs" rather than straight lines—to see that answers to a question can be varied and legitimate possibilities at the same time. The ability to think in these ways has been shown to develop through cooperative and participatory learning. According to Kim, Parks and Beckerman (1996), "Well-designed participatory learning activities allow students to think critically, to improve their communication skills, and to implement action projects" (p. 171).

In addition to this, "numerous research studies ... have revealed that students completing cooperative learning group tasks tend to have higher academic test scores, higher self-esteem, greater numbers of positive social skills, fewer stereotypes of individuals of other races or ethnic groups, and greater comprehension of the content and skills they are studying" (Johnson, Johnson and Holubec, 1993; Slavin, 1991; Stahl and VanSickle, 1992; as quoted in Stahl, 2003, p. 1). Thus, cooperative learning tasks, in which learners actively participate in building a body of knowledge, enhance their development as learners and also as human beings.

However, some researchers have found that when students first embark on cooperative, participatory learning, they may not have the necessary skills. According to Lipman (1991), "the cognitive skills enquiry, reasoning, information organizing and translation are all seen within the context of dialogue or constructing meaning" (as quoted in McGrath, 2003, p. 613). Many students do not know how to engage in dialogue and discussion of a topic. Kim, Parks and Beckermann (1996) found that "some small group discussion facilitators were unclear about what they were expected to do" (p. 175). For some students, the skills of discussion and dialogue are not skills that they use competently and confidently.

This article examines the teaching of discussion skills so that students can more fully participate in cooperative learning tasks. Five areas crucial to teaching discussion skills are delineated: (1) factors which discourage the development of discussion skills; (2) creating a classroom climate for discussion; (3) guiding principles for deciding what to discuss; (4) ways to prepare students for discussion; and (5) monitoring discussion and giving feedback. If teachers can help students develop the discussion skills they need, then students will be able to have more meaningful and fulfilling cooperative learning experiences.

Factors which Discourage the Development of Discussion Skills

There are many reasons why students do not develop good discussion skills in classrooms today. A major problem is that when an educational system depends on "right" answers to all its questions, linear thinking results. Linear thinking is defined as "to continue to look at something from one point of view" (Arnold Publishing, 2000). These linear patterns of thought are caused by many factors and they exist in all societies of the world. Sometimes they are good, especially when a specific answer is needed; for example, when patients go to the doctor and tell him/her that they have a temperature of 37.8°C. However, too much linear thought can inhibit the ability to think creatively or critically or to offer alternative solutions to problems. It is in response to a predominance of linear thought that governments and business leaders are calling for more creative, analytical graduates. This is being talked about much in the press in Singapore, where in January of this year the front page headline in the Straits Times newspaper was: "Pre-school plan puts play on top. Never mind neat handwriting;

switch to activity-based learning promises to turn out confident children who speak up". One sentence from the article reads, "Children will be encouraged to ask questions and talk to their classmates". The fact that this is a front page news article shows just how pervasive the problem of linear thinking has become and what one possible solution to the problem is.

The Chinese education system, which has been very influential in all of Asia's classrooms, has two significant characteristics which seem to contribute to "linear thinking". The first characteristic is the hierarchical nature of society in Confucian thought. Reagan (2000) in his book, *Non-Western Educational Traditions*, writes:

... Confucian moral thought is grounded in the concept of the five basic human relationships: ruler and subject, father and son, husband and wife, older brother and younger brother, and between friends. Each of these relationships is hierarchical. ... However, it is important to understand that each of these relationships, as envisaged by Confucius, was to be one of mutual responsibility. ... This reciprocity, although very much affecting both parties in the relationship was nonetheless in no way intended to be one of equality. (p. 107)

The second characteristic of the Chinese education system influencing classrooms today is the heritage of the imperial examination system. This examination system began in the Han period in 206 BC and was abolished in 1905 AD; it lasted over two thousand years and China has only been without it for a little over one hundred years. It was, according to Reagan, "a highly effective, meritocratic means of providing a reasonably fair and objective means by which officials could be chosen" (p. 113). It consisted of three levels of examinations, district, provincial and metropolitan, and doing well on these examinations guaranteed a good place in the civil service. For many years, it ensured that the empire would have the best possible civil servants and, in theory, it allowed civil servants to be chosen by objective standards from all walks of life and all levels of society.

These two aspects of Chinese education have contributed to the teacher-student hierarchical relationship and the "there is always a right answer" mentality. These two aspects impede creative and critical thinking and discourage discussion in the classroom. Lest we think that these two

aspects of education are characteristic of Chinese education alone, consider the following from the United States:

Some students' need for security leads to a further, equally flawed assumption: every question has but one correct answer, and the teacher knows what it is. A study undertaken some years ago by William Perry at Harvard College suggests that most entering freshmen subscribed to this comforting belief, confirmed by the multiple-choice examinations most of them had encountered in high school and on their SATs. (Wilkinson and Dubrow, 1991, p. 250)

Thus, the problem of always looking for one "right" answer needs to be addressed by many educational systems the world over.

How do these problems, the teacher–student hierarchy and the "right" answer mindset, exhibit themselves in classrooms today? In the following sights with which we are all too familiar: quiet students, too afraid to speak; students clamouring for the "right" answer; and students who cannot voice simple opinions.

Classroom Climate

In order to change these students into active participants and discussers, we must first change the classroom climate in which they study. Scholars and researchers examining discussion all feel that a discussion cannot take place unless the classroom climate is right for it (Bateman, 1990; Christensen, 1991; Palmer, 1993; Shaw, 1992). Jin and Cortazzi (1998) document the teacher-centredness of classrooms through their research in China and the UK. However, the climate which discussion proponents espouse will not occur in a teacher-centred classroom. A climate in which students feel free to discuss issues, problems, solutions and to examine different and divergent points of view has the following characteristics:

1. It is an "open" classroom—open, firstly, in that students are free to say what they think about something without fear of disdain, embarrassment or becoming an object of ridicule. Open, secondly, in that students are free to change their opinions and change their minds.
2. It is a "supportive" classroom—supportive in that one of the goals of the teacher and the students is to help speakers clarify their ideas, both to

themselves and to others. Students and teacher work together to help each other elucidate and refine their ideas.

3. It is a hospitable place. According to Palmer (1993) "A learning space needs to be hospitable not to make learning painless but to make the painful things possible, things without which no learning can occur—things like exposing ignorance, testing tentative hypotheses, challenging false or partial information, and mutual criticism of thought" (p. 74).
4. It is an agenda-free classroom. Teachers do not push political, religious or social agendas in the classroom and they allow students to explore ideas and put forth opinions that may be different from the teacher's personal views. If we are to get away from the "right" answer aspect of education, teachers cannot have a "right" view for the way an issue or idea is considered.

A classroom climate suitable for discussion should, thus, be open, supportive, hospitable and agenda-free. What can we do to foster such a classroom climate? First, we can give students ample opportunities to get to know each other at the beginning of the class. Instead of simply having students greet each other in pairs, interview each other and then introduce each other to the class, if we take the time to have all students interview everyone in the class, including the teacher, students feel more at ease with each other from the beginning. One class period is usually needed for students to get to know one another. One way of arranging this is to have students interview each other and fill out a grid, such as the following:

Student name	E-mail address	Contact number	What you like about	What you do not like about
1.				
2. etc.				

This can, of course, be adapted to the environment in which it is done. Students can express what they like and do not like about the place they live, or about food, hobbies, etc. This gives the students their first opportunity to express an opinion to one of their classmates.

It is also very important for every student to meet every other student in the class and to "force" them to make eye contact with every other student in the class, because eye contact is the basis of the "posture" for

discussion and the exchange of ideas. At the beginning of a course, students are most often strangers to each other and some students may come from cultures in which they do not make eye contact readily with people they do not know. According to Ritts and Stein (2002), "Eye contact, an important channel of interpersonal communication, helps regulate the flow of communication" (p. 1). This grid-filling exercise gives all students the opportunity to make eye contact and talk to each other, and it gives the teacher the opportunity to talk to all the students individually. Though this exercise usually takes a full class to complete, the classes in which it is done have a much better environment for discussion.

In addition to this get-to-know-you exercise, Wilhelm (1999) suggests in her article "Collaborative *Dos* and *Don'ts*" that teachers "throw a class party at the beginning of the term rather than at the end, as is customary" (p. 15). This is another way of helping students to get to know one another earlier rather than later and it enables students to feel at ease with each other, thereby creating a good classroom climate for discussion.

Another means of creating a good classroom climate is to overtly let students know that the teacher values different opinions and ideas about topics. One way this can be done is by having students discuss slogans such as the following: "Everyone is entitled to his/her opinion." "We agree to disagree." and "If two people agreed on everything, one of them isn't necessary."

Also, teachers can credit students for their contributions to discussions, as Wilkinson and Dubrow (1991) suggest: "Referring to 'John's theory' or 'Mary's important observation' later in a conversation shows that we [teachers] remember and value their efforts" (p. 252).

Another suggestion for creating a good, open, supportive climate for discussion is to set boundaries, or rules, for students just learning the skills of discussion. These boundaries should focus on what are appropriate and inappropriate ways to react to others' ideas, and how to listen to others' ideas. If students do not naturally use English, the use of English can also be a rule for class discussion. Rules work best if they come from the students themselves. So, it is helpful to devote one lesson, early in the term, to a pair or small group discussion to focus on what class criteria are needed for a good, polite, supportive discussion.

A final suggestion for creating a good climate for discussion is that teachers need to keep their views to themselves. A good climate for discussion is one in which the teacher's views are usually not known and not stated and students are free to explore their own ideas and views without the "fear" of disagreeing with the teacher. If a student, beginning to learn the skills of discussion, feels that his/her opinion is "wrong" because it differs from the teacher's opinion, then that student will not contribute his/her own ideas. A teacher's role in a discussing class is to facilitate the learning of discussion skills; this cannot be accomplished if teachers are participants in the discussions themselves. Teachers need to be observers and provide the scaffolding students need to be analytical and creative.

Selecting Material for Discussion

There are several principles that should be followed when finding material for students to discuss. However, students should have some autonomy in deciding what to discuss. Students write better when they write about topics they know and enjoy; likewise, students learn discussion skills better when they discuss topics of importance and interest to them. However, when students are first learning discussion skills; they may not know of topics to suggest. Later, when they are at ease with each other and have developed their discussion skills to some extent, they should be able to discuss topics of importance and interest to them. So, when teacher-facilitators have to choose discussion topics, what principles should be kept in mind?

The overriding principle for selecting discussion materials is that students should learn only one skill at a time. When they are learning the skills of discussion, they should be able to concentrate on learning those skills, not learning about the topic to discuss. Therefore, teachers should bear the following principles in mind:

1. Teachers should try to ascertain which topics are of interest to students and have students discuss those topics. They should try not to discuss topics that students are not interested in and/or do not know anything about.
2. Teachers should not have students discuss societal "high-stakes" topics. That is, they should not discuss topics that students, just learning to give opinions, will have difficulty stating an opinion about. Students may be uncomfortable discussing topics such as capital punishment, freedom of

the press, gay marriages, women's rights, etc. If students at a later part of the course decide for themselves that they want to explore these topics and discuss them, then fine; but if students are trying to learn how to state opinions in "public" for the first time, then allow them to discuss topics with which they are comfortable.

3. Teachers should introduce topics about which students can easily form opinions. In light of this, short stories and novels provide good fodder for discussion. First, they provide "low-stakes" topics because discussions centre on what is in the story or novel. Students can have a good, interesting discussion about something that is "outside" themselves and their society and they can choose whether or not that is applicable to their lives. Second, as the story/novel unfolds, opinions about characters and outcomes can change and this teaches students the changing nature of opinions. Often, students are afraid to give an opinion because they feel that by stating that opinion, they are bound to it for the rest of their lives. Discussing the characters, their motivations and actions, for instance, shows students that their opinions can change; what a character does halfway through a novel may change our opinion of him/her. Third, if a short story or novel is interesting, even those students reluctant to speak will get involved in the discussion.

Preparing Students for Discussion

After the materials have been selected, the students should then be prepared for discussion. To be prepared for discussion, students should be ready to say something that will contribute to the discussion. They cannot simply be put into groups and told "Discuss topic X/this story". Ensuring that students are prepared for discussion can be done in the following ways:

1. Teachers can give assignments that allow students to think about what they will discuss in advance. When teachers are first helping students to develop their discussion skills and assign them something to read for discussion, they might give students one or two discussion questions and ask them to write one or two more. Then, support can gradually be withdrawn when students start reading articles and stories and see on their own what they want to and can discuss.
2. Teachers can assign "roles" for discussion, such as facilitator and participants, and give students responsibilities that accompany these roles. For

- example, the responsibilities given to the discussion facilitator might be the following: to read the selection thoroughly and think of several discussion questions and follow-up questions to ask; to make sure that everyone in the group participates in the discussion; to listen to how group members answer questions and to ask follow-up questions to help them clarify their ideas. The responsibilities for group participants could be the following: to read the selection carefully and thoughtfully; to participate in the discussion by answering the facilitators' questions by stating their opinions and ideas; to listen to what group members say and ask them questions about what they say.
3. Teachers can give demerits for those who come unprepared. This can be done by taking note of who discusses and who does not while a discussion is observed, or by having students do a written response to a reading selection before having a discussion about it, or by giving a short true/false quiz on the reading selection prior to the discussion. It is not fair to the discussion facilitator to have participants who cannot take part in the discussion because they did not read the material or do the assignment; it is the teacher's responsibility to ensure that a student who is trying his/her wings as a facilitator has group participants who can discuss the reading selection.

Monitoring Discussion and Giving Feedback

If students are learning pronunciation or grammar skills, teachers monitor their learning as they learn these skills and give them feedback as to how they are doing. Discussion skills deserve the same monitoring and feedback. Monitoring and feedback of discussion should be done by both the teacher and the students.

Teachers can monitor discussion as they listen to groups having discussions. They can give facilitators, and if time allows, participants, feedback on notecards, jotting down a facilitator's strengths and weaknesses during a discussion. Teachers can also observe discussions and give facilitators grades for their skills in fostering a good discussion.

Students can reflect on their experience as discussion facilitators. They can write short reflective pieces or journal entries and reflect on their discussions: what went well, what went poorly, what they would like to do the same way, what they would change, etc. Students can also be videotaped

as discussion facilitators and, after viewing a videotape of themselves as facilitators, they can write a reflective report on their strengths and weaknesses, and how they felt while facilitating the discussion.

Summary

In this article, five areas crucial to teaching discussion skills have been examined: (1) factors which discourage the development of discussion skills; (2) creating a classroom climate for discussion; (3) guiding principles for deciding what to discuss; (4) ways to prepare students for discussion; and (5) monitoring discussion and giving feedback. It is hoped that through consideration of these five areas, teachers will be able to help students develop discussion skills and, thus, enhance the quality of cooperative learning activities.

As Brown (2003) states, "Authentic learning requires the learner to communicate an in-depth understanding of a problem or issue rather than memorize sets of isolated facts, and it must result in achievements that have relevance beyond school" (p. 2). Good discussion skills used as part of cooperative learning give students authentic learning experiences; this both aids them in their education and also prepares them for the worlds of business, government, teaching or whatever profession they choose.

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