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## Computer-Mediated Peer-to-Peer Mentoring

FRANCESCO CAVALLARO  
*Nanyang Technological University*  
*Singapore, Singapore*  
cfcavallaro@ntu.edu.sg

KENNETH TAN  
*Singapore Polytechnic*  
*Singapore, Singapore*  
kenntan@sp.edu.sg

An online collaborative writing project was carried out between two report writing classes from two separate institutions, Nanyang Technological University (NTU) and Singapore Polytechnic (SP). The aim was to test how successfully a peer-to-peer mentoring system could be established using asynchronous and synchronous communication features. The results from this pilot study were very promising and show that students were extremely motivated and produced high quality work. This leads the authors to conclude that well planned and implemented mentoring projects are possible through the electronic medium and can be quite effective.

Learning and teaching are primarily about interaction: interaction between students and teachers, between students themselves and between the students and the course material (Moore, 1989). In our technologically advanced classrooms such interactions are increasingly taking place online. However, it is also quite true to say that initiating and maintaining meaningful student-to-student and student-to-teacher interaction through electronic mediums is the biggest hurdle facing online learning to date.

Moore (1989) defined interaction in terms of three categories: (a) learner—content, (b) learner—instructor, and (c) learner—learner. Translated to online instruction, the first type of interaction as been addressed (to a certain extent) by the development of interactive courseware. The second type has also been addressed by the great advances made in e-learning platforms and virtual classroom software. These two issues, those of interactive courseware and of teacher—student interaction are beyond the scope of the present article and will have to be left for future consideration. In this article the authors wish to address the last of Moore’s categories of interaction. That is, interaction in terms of a two-way communication between students themselves. This article will outline how, with a little planning, effective interaction amongst learners leading to peer-to-peer mentoring can be successfully achieved online.

### **ONLINE COLLABORATION**

It is a fact that when interaction between the learners and between the learners and the material is heightened learning is most effective, and it was with this point in mind that the present project was developed. Freiermuth (2002) proposed that “...it is important that language learning in the computer classroom also include ample opportunities for interaction with others” (p. 36). The authors believe that this should be true of all computer aided classes and will argue in this article that well organized and implemented synchronous and asynchronous sessions can be used to enhance interaction between students.

Writing is, by nature, an interactive process. This is because it evolves out of the symbolic interplay between writer, text, and reader. While planning a written piece, the writer has to consider the audience and to adopt a reader-oriented approach. This is if they want to achieve the desired function, be it persuasive, emotive, or objective (Massi, 2001). It was our intention to make the writing conditions more “authentic” than the ones our students normally face in the classroom. We hoped that, by taking the classroom online and to a different institution an awareness of audience, purpose and intentionality would be reinforced.

Taking writing online has shown positive results, both in attitude and quality of writing. Lindblom-Ylänne and Pihlajamäki (2003) had their students share drafts of their essays online for both their peers and teachers to make comments. They stated that “An ideal [online] environment mitigates physical barriers and...transforms the writing process from private and individual to shared and socially supported” (p. 28).

In summarizing past work done on online reading and writing tasks Warschauer (2001) pointed out that students’ writing becomes more collaborative, more purposeful and more reader-centered “...in those classrooms where the Internet was integrated by teachers into a collaborative, content-focused project work, and not in situations characterized by a high amount of teacher control and a focus on the mechanics of writing” (p. 209). This is certainly something educators should give due consideration when planning their e-learning courses.

The facility to arrange to “meet” either synchronously or asynchronously allows classes to be flexible in both time and place. Forums are fairly easy to set up and the communication takes place at the convenience of the students. That is, they can access and contribute literally anytime and from anywhere there is a computer linked to the Internet. Chats need some prior arrangement for the students to meet at a designated time. Other than that, they can be accessed from any computer with an Internet link.

As other researchers (Freiermuth, 2002; Warschauer, 1996) have found, online participation is more equal and not dominated by more outspoken students (see summary in Warschauer, 2001).

## **PEER MENTORING**

Definitions of what is a mentor are numerous. What is agreed on is that mentoring usually involves a one-to-one (sometimes one-to-group) relationship between an older person and a younger one. The role of mentors is to pass on their knowledge and experience and to provide guidance to the younger and more inexperienced mentees (see Rosner, 1996; Powell, 1997 for a detailed summary).

The benefits of a mentoring program have been detailed extensively by many researchers and to list them all is beyond the scope of this article. In summary we can say that mentoring has been found to raise the academic achievement of both the mentors and the students they are mentoring. For the mentees the benefits are evident. They have a role model (the mentor) who is not too far removed from them and is seen as an achievable goal. The benefits for the mentors are that their role provides a context for the student mentor's own learning, and provides the opportunity for the mentors to use their knowledge in a meaningful way. These benefits are not limited to the brighter students, but are also true of weaker students. This is because when students are put into a teaching role they find both the motivation and the opportunity to review, learn, and comprehend the subject material; including the material that they have not yet mastered.

## **THE PROJECT**

In this project the authors developed an online peer mentoring task between two groups of students from two different institutions, Nanyang Technological University (NTU) and Singapore Polytechnic (SP).

The primary advantage of an inter-institutional collaboration for this project was one of physical distance between the two groups of students. The institutions are about 11 kilometres apart. This ensured that the interaction between students was completely online.

Another driving force behind the collaboration between a polytechnic and a university was the opportunity to develop a mentor-scholar relationship between the two groups of students. The university students are generally older than their Polytechnic peers, especially the males who have served their National Service before enrolling.

As previously discussed, the NTU students stood to gain enormously by mentoring the younger and less experienced polytechnic students as peer teaching is in itself a very effective way of learning. Furthermore, NTU students would also have access to fresh and "real" data provided by the polytechnic students. SP students, in turn, benefited from the feedback and guidance provided by the more experienced students from NTU.

This pilot project was designed so that students' interaction was solely through the written medium, that is, a synchronous (chat) session and an asynchronous session (discussion forum).

## **OBJECTIVES**

The project aimed to develop and test the use of computer-mediated communication in peer-to-peer mentoring. The second aim was to allow NTU and SP students to test their application of report writing skills on an objective audience. SP students now had a "real" audience for their reports, not a lecturer who was simply going to mark them. This was particularly important. As earlier outlined, adopting a reader-oriented approach is fundamental in writing and giving the SP students an audience from outside the classroom gave them further motivation to produce better work. NTU students, instead, tested their ability to critique the SP students' work. For both groups, the writing tasks were used to consolidate what they had learned as part of their coursework. The effectiveness of the pilot project was assessed in qualitative term in view of making the collaboration an ongoing event between the two institutions.

## **PROCEDURE**

Participants from SP included one first year Report Writing and Presentation class. The class was made up of 23 SP students, 9 females and 14 males. They were between 17 and 18 years of age. Participants from NTU included one first year Technical Report Writing class with 20 students, 7 females and 13 males. They were aged between 18 and 24. Polytechnics in Singapore take in their students after they have completed their "O" Levels. Students going into the first year of university, instead, need to have completed their "A" Levels. The males also need to finish their National Service (NS) before starting their university studies. Polytechnic students can wait till they finish their diploma before doing their NS. This accounts for the difference in ages between the two institutions.

Both groups of students were divided into six sub groups of three-four students. Each SP group was assigned one group of NTU students as mentors. Both institutions use Blackboard as their e-learning platforms. This meant that the students were familiar with the software. A Blackboard course site was hosted by the NTU class and provided guest access to the participants from SP. The online discussion was organized through a synchronous chat session, followed by asynchronous communication through a discussion forum. Both sessions were set up using the communication features of Blackboard.

The initial chat was designed with two objectives in mind. The primary aim was to allow the students to establish contact so that all participants could get to know each other and establish who the mentors and mentees were. By breaking the ice in an informal chat session both sets of students got to know who they were writing for and what expectations each group held for the collaboration. This was also when the second objective (audience analysis) was met. As outlined above the reader-centred approach can only be adopted if an audience analysis is carried out at the start of the writing process.

One minor issue that needed to be resolved for this initial chat session was that the classes did not share the same time slot. This meant that because of this timetable constraint the chat session was done outside of the NTU's students' normal class time. Therefore, the NTU students were asked to attend an extra class. This class was conducted in a computer lab. The SP students had the problem of not having a computer lab available during their class time. So they stayed in their classroom, which had only one PC (see Summary section).

This meant that the chat sessions were limited to about 6-7 students going online at any one time. These were each SP group and their NTU mentors. The instructors kept track of who was speaking to whom, made sure all had a turn and that all students got to know their mentors/mentees. The session lasted for about one and a half hours. During this session the students were encouraged to elicit as much information as possible from their mentors/mentees so as to get to know them as much as possible. The audience analysis was continued afterwards in class with the respective tutor by reviewing what the students had learned about the students from the other class.

Next a discussion forum was set up on the course site. This allowed for great flexibility in when and from where the students could access it and, in actual fact, all work done in the discussion forum was done outside of class time.

## **THE TASK**

The SP students posted six case studies based on group work conducted as part of their course work on the discussion forum. These case studies were posted on the course site in a report format using MS Word. They contained the Introduction and Results (main body) sections only of the reports.

Based on the information supplied in the reports, the NTU students' role was twofold:

- to comment on the language, structure and format used in the reports by the SP students; and
- to provide possible Conclusions/Discussions and Recommendations sections based on the aims and scope of the reports.

The two lecturers involved monitored the forum discussion. In particular, the input by the NTU students was monitored to ensure only constructive criticism was supplied. This provided crucial clues to how well NTU students had internalized what they had learned in class. The forum ran for two weeks and in this time there was a constant posting of comments from the NTU students and of replies from their SP peers.

At all times, both sets of students needed to communicate their intentions clearly. This was particularly true for the SP students when reviewing and replying to the comments posted by their NTU mentors. However, they did not necessarily have to accept, nor adopt the comments, conclusions, or recommendations provided by the NTU students into their final reports. They should, however, have been able to benefit from the feedback provided as well as appreciate the roles played by their older peers.

The language was analyzed by the NTU students in terms of grammar, tone, and structure and whether it was appropriate for the audience. The NTU students should have been able to use their report writing skills to also

identify flaws in the presentation of information in terms of format and proper sequencing of information. Importantly, they should have been able to communicate those flaws (as well as positive comments) to the SP students.

## Summary

What Worked	What Didn't Work so Well
<p>Blackboard's communication facilities worked very well for both the asynchronous and synchronous communication sessions.</p> <p>The newer versions of Blackboard are even more powerful and versatile. For the chat sessions Blackboard now uses "Virtual Classroom." This is a relatively easy feature to use and it allows the class to be divided into numerous "Breakouts." That is selected users can have their own chat window (see note in "What didn't work so well").</p> <p>The older NTU students were very sensitive and encouraging towards their SP mentees. The comments made by the NTU students were carefully worded, supportive and not overly critical.</p>	<p>As discussed previously, the chat sessions between each group were conducted one at a time due to the SP class having access to only one PC. This meant that each NTU student was online with their own PC. The SP group was crowded around one PC only.</p> <p>Future planning should take into consideration the timetabling of the classes and the availability of computer labs.</p> <p>What could have worked better would have been to organize a chat room for each mentor and mentee groups. That is, since each class was divided into six groups, there should have been six chat rooms and each participant should have used a PC.</p> <p>The comments made by the NTU students were really not critical enough. The NTU mentors were very careful (perhaps a bit too careful) not to upset their younger peers in any way. Future editions of this project would have to encourage the mentors that while the aim is to be supportive, if they see something they really do not agree with they should let their mentees know.</p>



## **ANALYSIS AND CONCLUSIONS**

This pilot project was not set up initially to measure whether the end product showed any improvement. However, it was obvious to the authors that the reports that were produced in the end were of extremely high quality. A comparison with reports from other SP Report Writing and Presentation classes showed a marked jump in the quality of both the language and their content. Both sets of students also showed that they had indeed internalized most of what they had learned in their courses. The authors conclude that having an outside audience gave the SP students the motivation to work harder and produce good work. Placing the NTU students in the role of mentors also motivated them to do their best for their younger SP scholars and their input served to improve the quality of the reports. A future collaboration would include a proper assessment of the reports so that proper comparisons can be made.

The authors can conclude that both main aims of this project were achieved. This project set out to test the feasibility of computer-mediated communication in peer-to-peer mentoring between students from separate institutions and to see whether the students benefited from the mentoring experience. The online interaction allowed NTU and SP students to discuss, write, and collaborate on the task given and the end result was of a quality comparable to anything that face-to-face group work would have produced. In this respect, the interactive chat and forum created with Blackboard worked extremely well to achieve this aim. Both sessions went without any technical problems and Blackboard's communication features were clear and easy to use.

The online medium was not a hindrance in allowing both groups to analyse their audience and then to communicate their thoughts and ideas accurately. Both sets of students were able to carry out their tasks efficiently and effectively. This, together with the added bonus of seeing normally quiet and reserved students "speak out" through the forum, leads us to conclude that if a task is well planned and implemented the Internet or a networked environment can certainly be an effective tool for promoting computer-mediated peer-to-peer mentoring.

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