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Author(s)	Yip Meng Fai, Quek Choon Lang, Britta Seet Ying Ling & Angela F. L.Wong
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# How Do Singaporean and German Students Collaborate Using Online Discussions in Classroom Project Work?

Yip Meng Fai, Quek Choon Lang,  
Britta Seet Ying Ling & Angela F. L. Wong

## Abstract

*This online collaborative project enhances the traditional face-to-face teaching and learning in a typical classroom. It provides an avenue for innovative teaching and learning in the borderless world between Singapore and German secondary schools. Using this cross-cultural context, the project focused on two parts. In the first part, the students from both countries learnt the project skills of argumentative writing, researching on genetically modified food and its related issues. They also learnt to work in collaborative groups in the planning of debate with their overseas counterparts. In the second part, the students engaged in the debate culminating in a "live" exchange using Microsoft Network (MSN) Chat.*

*The local sample consisted of 32 students (aged 13–14) from one class in a typical Singapore high school, while the German sample consisted of 16 students (aged 15–16) from one class in a high school in Neustadt i.H., Germany. The students' responses in this online learning approach were analysed qualitatively. A teachers' resource file was written and a website recording of the exchanges was created. The implications and key learning points of this project will also be discussed in this paper.*

## Introduction

The introduction of project work into the curriculum aims to better equip students with creative and critical thinking skills, communication skills, collaborative learning skills, and self-directed inquiry and life-long learning skills (Ministry of Education, 1999). Since the implementation of project work into the school curriculum in the last three and a half years, some research projects have been conducted about project work in classroom learning environments in local primary schools (Quek & Wong, 2002). Thus far, there has been no Singaporean research conducted about using technology for online collaboration with overseas schools in the context of project work. This study paves the road for opportunities using technology in online collaboration between teachers and students beyond the physical classrooms. It would be beneficial to observe how the Singaporean and overseas secondary school students communicate and negotiate their ideas as they carry out the online project on genetically modified food in the online learning environment.

## Literature Review

Jonassen, Howland, Moore and Marra (2003) highlighted the significant roles of how technology can be used to foster meaningful learning. These roles include using computers as tools for knowledge construction and as information vehicles to support learning by constructing. In order to realize the important roles of technology in teaching and learning, the roles of teachers and students are also important. In line with the online learning environment, Palloff and Pratt (1998) stressed that the role of online learners entails knowledge generation and collaboration. They are expected to participate actively and to learn and work collaboratively (Khan, 1997) in order to achieve deeper understanding of the learning tasks. Lynch (2002) highlighted that teachers are expected to be responsive, competent and organised in facilitating the entire online learning process. In the online environment, teachers ought to foster a sense of community among the learners by creating a non-threatening and friendly environment. The teachers are expected to provide frequent feedback, encourage student participation and acknowledge comments. During the entire online learning process, the teachers' skilful pedagogical knowledge in facilitating is crucial in helping the community of learners achieve their learning goals.

Research into the online environment (Khan, 1997; Palloff & Pratt, 1998, 2001; Tobin, 1998) had shown an increasing trend of online teaching and learning in tertiary institutions. In these tertiary institutions, the purpose of an online learning environment was to provide greater access to learning to all students who are separated by distance from the instructors. In the present context, the purpose is to provide greater access for students from different countries who are, of necessity, separated by distance from each other. The field of collaborative learning has undergone remarkable development and growth in the last three years. Recent research (Baker, 2002; Crook, 2000) had shown that collaborating participants learn if they engage in certain collaborative activities such as argumentation, explanation and mutual regulation. These collaborative activities trigger particular learning mechanisms such as knowledge elicitation and reduced cognitive load. It is relevant to ask what the role of the online learning environment is and how it makes the circumstances for potential collaboration more optimal.

According to Häkkinen (2002), shared workspaces and communication tools can provide a natural setting for argumentation, explanation, knowledge articulation and other demanding cognitive activities. They can also enable the sharing and distribution of cognitive load, and bring thinking out in the open. Networked environments used in different learning environments provide the learner with a relevant platform for communicating and sharing knowledge. Consideration of social infrastructure should also be emphasised. This refers to the integration of IT into the core educational processes of the whole community, curriculum, assessment and so on (Häkkinen, 2002).

## Objectives

These are

- (i) to investigate the extent of building ideas among Singaporean and German students;
- (ii) to understand how the Singaporean and German students collaborate in the online environment;
- (iii) to suggest strategies to address the problems encountered in the online learning environment.

## Background

The online interdisciplinary project involved Singaporean students engaging in the collaborative activity of argumentation, both asynchronous and "live", with their German counterparts. In September 2001, the first Asia–Europe Classroom International Teachers' Conference was held, during which teachers from member countries of the Asia–Europe Meeting (ASEM) met up to craft projects. The conference was organised by the Asia–Europe Foundation (ASEF). After the conference, the researchers implemented the projects in collaboration with their overseas partners. Two Singaporean teachers came up with the idea of having students from Singapore and Germany debating on the need for genetically modified food. The students learnt the skills of argumentative writing and research on genetically modified food and its related issues. By applying the content and skills learnt, the Singaporean students wrote arguments for genetically modified food, while the German students wrote arguments against it. At the end of the project, chat sessions were arranged where the Singaporean students debated with their German counterparts in the online environment. The Singaporean and German teachers facilitated the entire project. The teachers designed their own curriculum for this project.

The arguments, together with counter-arguments, were uploaded onto a relevant platform, a Web Group set up in Australia's Microsoft Network (MSN). The MSN Web Group (<http://groups.msn.com/1stAECClassroomMeetingPoint>) was used to exchange arguments and counter-arguments. The chat function on the Web Group, namely, MSN Chat, was used for the live debate with overseas counterparts at the end of the project. The product, which is a website recording of the live debate, is user-friendly to the students and the teachers (<http://www.pioneerss.moe.edu.sg/portal/AECweb/index.htm>).

## Methodology

### Sample

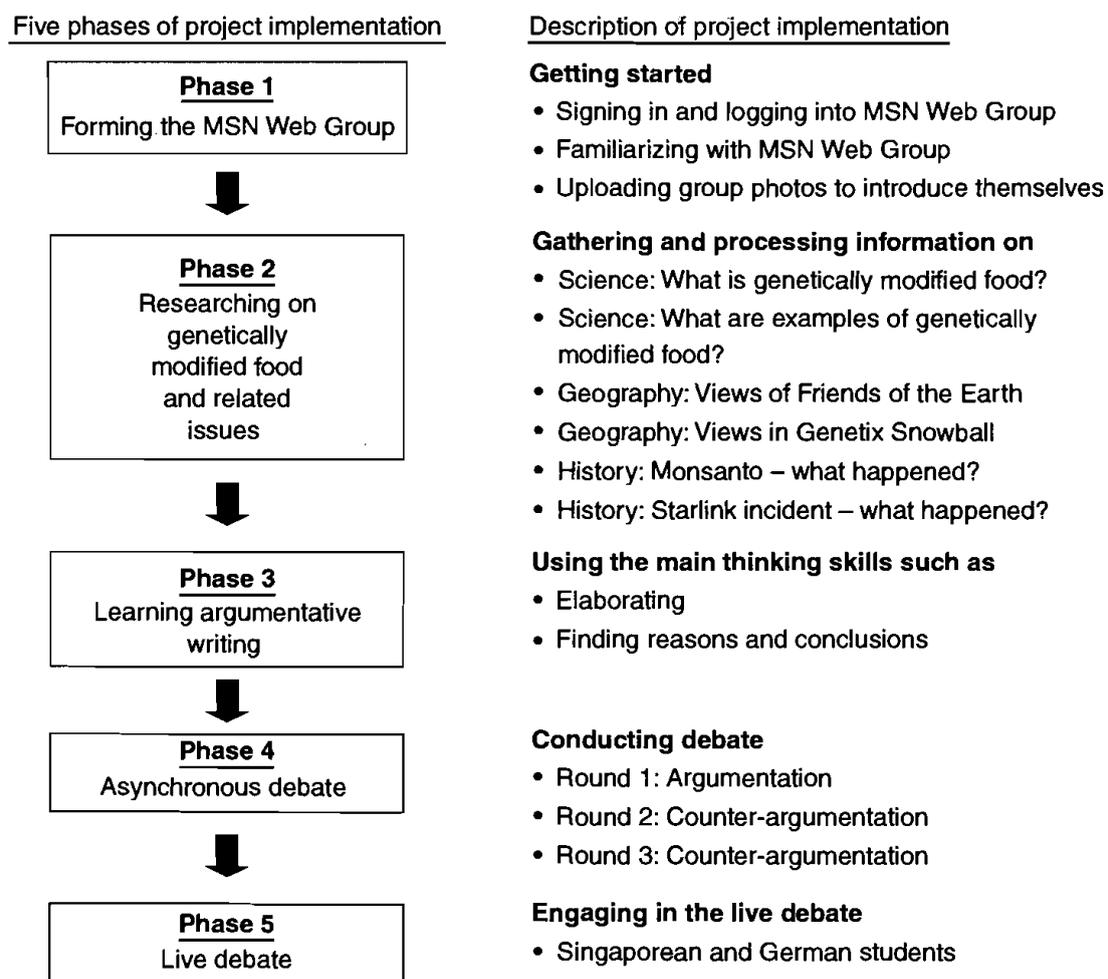
The Singaporean sample consisted of 32 students (aged 13–14) from one class in a typical co-educational Singapore high school, while the German sample consisted of 16 students (aged 15–16) from one class in a co-educational high school

in Germany. In Singapore, there were two supervising teachers, with each teacher taking half the class during the entire project work implementation. The 16 German students were facilitated by their German teacher throughout the project duration of one semester.

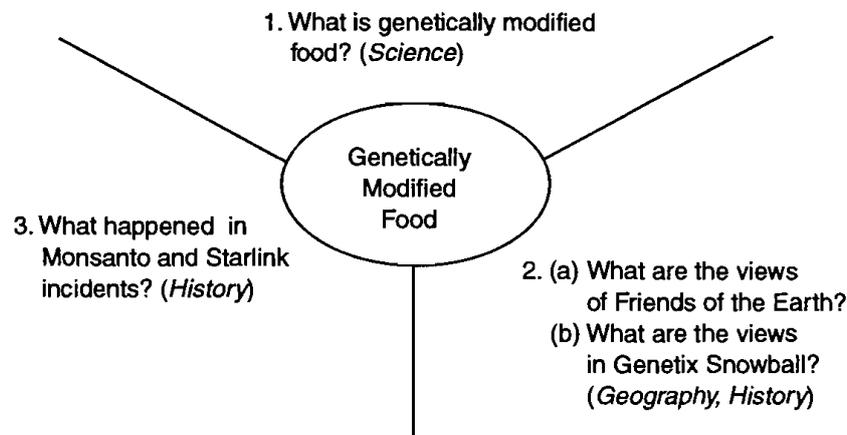
### **Procedure**

In order to accommodate the substantial number of students involved, the Singaporean students were divided into groups of four and the German students were divided into groups of two. There were 16 groups of students who participated in this project. Their work was recorded by the MSN Web Group. This project was implemented in five phases in one semester as shown in Fig. 1. The phases were conceptualised by the teachers.

In Phase 2, the students explored genetically modified food by addressing the questions shown in Fig. 2. Thus, the genetically modified food project was an interdisciplinary project which required the students to draw their learning from the disciplines of Science, Geography and History.



**Fig. 1.** Five phases of project implementation.



**Fig. 2.** A project web of three guiding questions.

In Phase 3, the students were taught two specific just-in-time lessons by their supervising teachers. They learnt the just-in-time skills of *Elaborating* and *Finding Reasons and Conclusions*. They used the first skill to elaborate on their arguments and the second skill to determine the reasons and conclusions given by their counterparts.

This project was designed to integrate Information Technology (IT) with the Life Sciences initiatives in Singapore. The theme of this project was Life Sciences and its focus was on genetically modified food and its related issues. This project was crafted based on the Project work guidelines provided by the Ministry of Education (1999) and the curriculum design framework from Jacobs (1989). The chosen theme was in line with the Ministry of Education's (MOE) emphasis on Life Sciences in the school's core curriculum with the purpose of preparing students for Singapore's efforts in the training of manpower and support for the government's initiatives in Biomedical Sciences. The MSN Web Group was used for exchanging arguments for and against genetically modified food. The chat function on the Web Group was used for live debate with overseas students. The students were also instructed to record their reflection logs during this project.

## Findings and Discussions

In this study, the qualitative approach was used to analyse the ideas posted by the students in terms of arguments and counter-arguments as well as the students' reflection logs. The analysis of the findings would be presented and discussed in terms of the extent of ideas built by students as well as the extent of online collaboration.

### *What Is the Extent of Building Ideas Together?*

During the initiation of this online project, students were briefed about their task objectives and the type of online tools to be used. Every group was supposed

to research, learn and debate in the MSN Web Group. Students built their ideas together in the following aspects:

- Participation by groups

*Ideas were presented actively by students.* In each asynchronous debate, groups of students presented their arguments and counter-arguments by uploading them on the MSN Web Group. From the debates, a total of 40 documents were uploaded by these 16 groups. This active participation shows that groups were able to work independently to present their views as well as build on others' inputs online.

- Engaging in debate

*Ideas were built by using arguments and counter-arguments.* The groups had to select some of the arguments and respond to their overseas counterparts. Fig. 3 shows part of an asynchronous debate, while Fig. 4 shows part of a live debate. Figures 5 and 6 show the thinking types used by the students and the extensive building of ideas by students at the end of the project.

At the final stage of the project, we observed that students were building on each others' ideas by giving counter-arguments supported by examples, showing the extent of the agreement and the argument.

Generally, the students' debate showed the arguments, counter-arguments, examples, posing questions and the extent of agreement. We had broadly categorised these as thinking types. These thinking types show how the trends of thoughts and arguments of these students are developed and handled during the debate. Table 1 shows the thinking types and the actual usage by the Singaporean and German students.

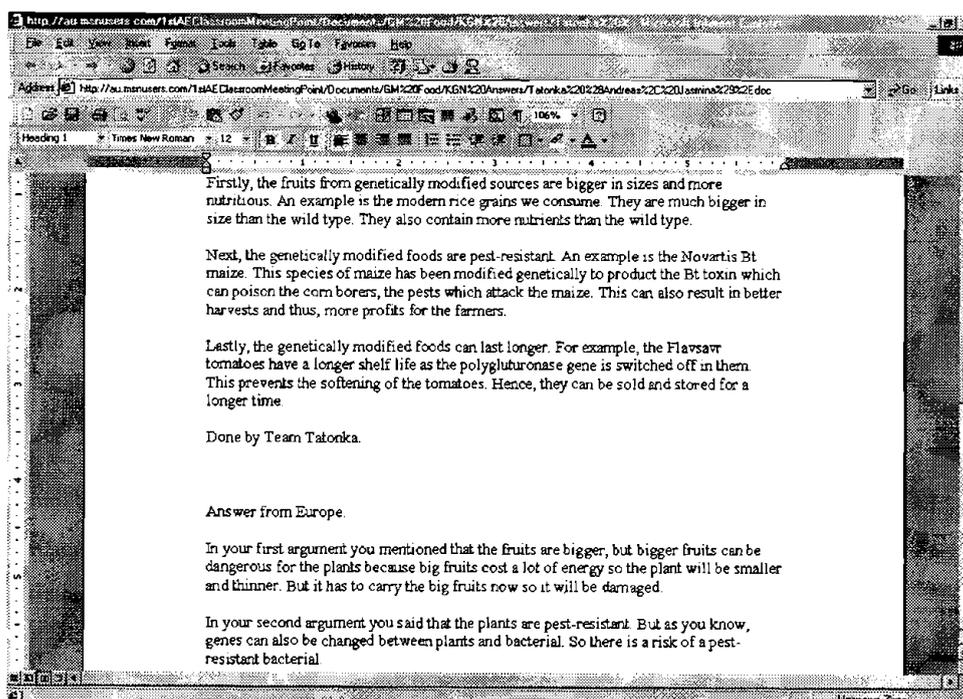


Fig. 3. An asynchronous debate on "genetically modified food".

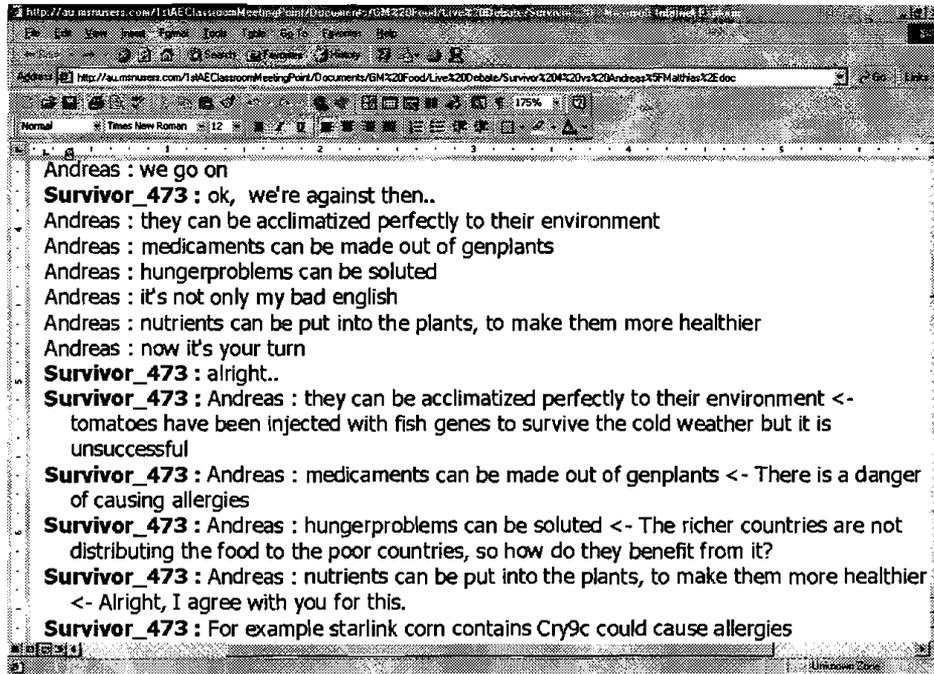


Fig. 4. A caption of the live debate on “genetically modified food” at the end of the project.

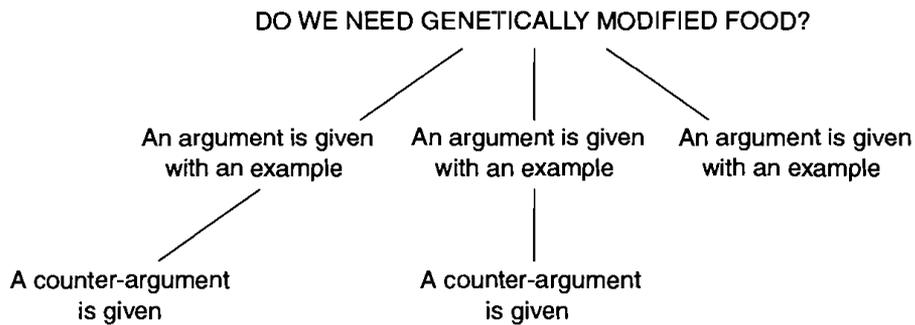


Fig. 5. Building of ideas in the asynchronous debate on “genetically modified food”.

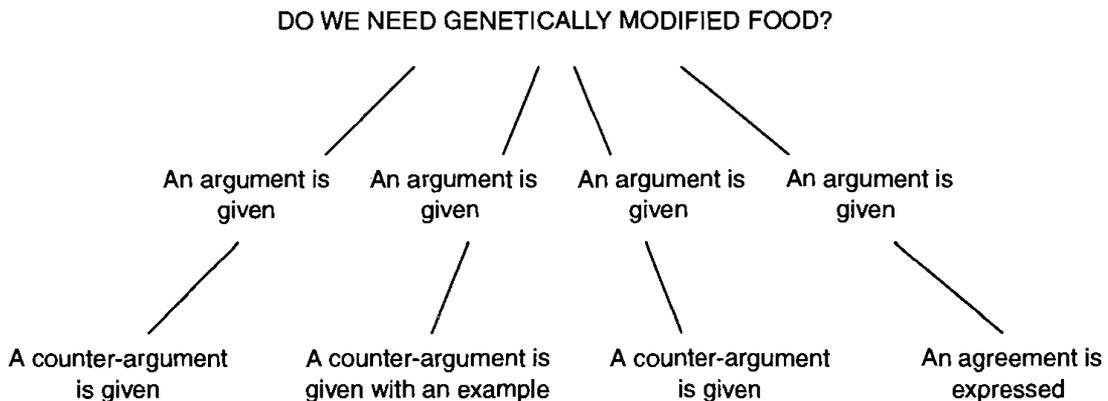


Fig. 6. Building of more extensive and structured ideas in the live debate at the end of the project.

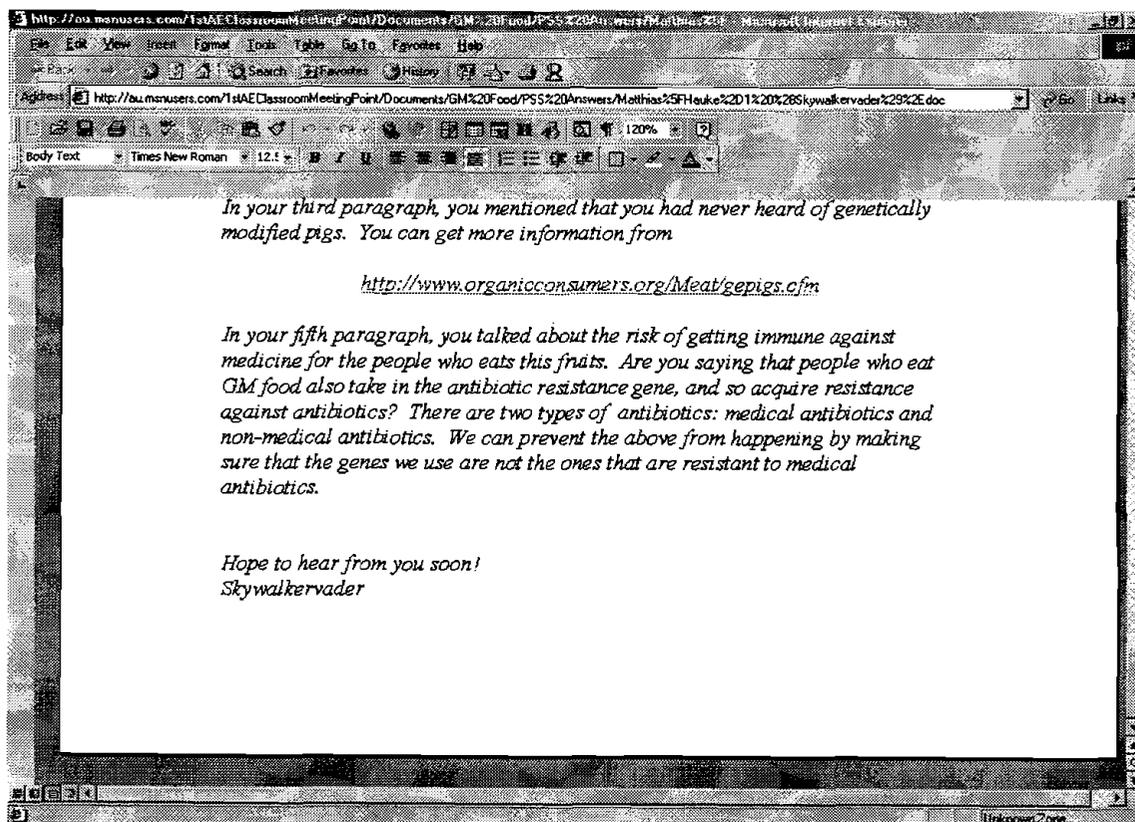
From the summary listed in Table 1, we observe that the main bulk of discussion among students was the presentation of their work in the form of arguments (116 times) and counter-arguments (80 times) with examples (46 times). Arguments were questioned from time to time (six times).

- Using online tools

*Ideas were built with useful Hyperlinks.* By presenting hyperlinks during discussion, the counter-arguments can be referenced. Hyperlinks are important in today's collaborative work because many references or resources can be found online through World Wide Web (WWW). However, from all debates, the Web Group recorded only one hyperlink, and it was only used as a response to a query. Figure 7 shows the hyperlink used by a group of students to provide reference to the information about genetically modified pigs.

**Table 1.**  
Summary of thinking types and their usage.

	Thinking types	Frequency
1	Argument	116
2	Counter-argument	80
3	Example	46
4	Questioning	6
5	Agreement	5
	Total	253



**Fig. 7.** Use of hyperlink in an asynchronous debate.

### **What Is the Extent of Online Collaboration?**

The online collaboration was the second objective of this study. We observed evidence of online collaboration in phases 1, 4 and 5 (Fig. 1) of this project. The students' comments and the teachers' observations are shown in the following phases:

- Phase 1: Forming the MSN Web Group

*An online community was formed in this phase of the project. This phase of collaboration shows that an online community was formed before subsequent online collaboration. In their reflections, a pair of German students were amazed that they were able to communicate with each other in this online mode.*

*We learnt that we can do things which had not been possible for some years ago. We can have conversations with people who live in some parts of the world far away.*

*Daniel & Andrius*

- Phase 4: Asynchronous debate

*The ability for this online community, after uploading group photos in phase 1, to have an asynchronous debate confirms the strong online collaboration among these students. In this phase, groups of students went through a period of learning where arguments were presented and debated. Some of the groups went through two rounds of counter-argumentation. In fact, this counter-argumentation marks a significant process of online collaboration for this project.*

- Phase 5: Live debate

*The ability of this online community, after the asynchronous debate, to have a live debate shows a stronger online collaboration among these students. We observed that the debate held at the end of this project was more focused than the ones held in the previous phase.*

Generally, the extent of student collaboration was reflected in the fact that the students participated actively during the project. They contributed their arguments and counter-arguments throughout this project.

### **Implications and Conclusion**

This study sets out to find out the extent of students' contribution and building of ideas together between two co-educational high schools. Generally, strong evidence was observed in this study and the objectives of this study were achieved. Written evidence in the form of students' discussions and debate provided from the online environment indicated the students' active participation and collaboration in the entire learning process. From this study, we deduced that it is very important for the project to be designed by incorporating opportunities for students to take on significant roles such as challenger, leader and reporter within their project groups. Role-playing provides the necessary dynamics and diversity needed for the online collaborative learning community. Through role-playing, they facilitated their own

learning processes of building ideas with one another. It was also observed that there was minimal guidance by the teachers in the online learning environment. The students facilitated their own learning after they formed their project groups. For example, the challenger played a significant role that questioned the arguments or provided counter-arguments in the discussions. By reading the students' written responses, we found out that in order for students to build ideas more effectively, they should be taught ways of searching for information and creating hyperlinks to these sources. They should also learn to verify the sources and check reliability of the information. This "just-in-time" teaching could be conducted at the initial stage or during the project. In this project, facilitation was done by both teachers and students. Facilitation by teachers who initiated this Genetically Modified Food project was in the face-to-face mode. In the face-to-face facilitation, the briefing of the project, task requirements and resources were made available to the students. At the end of the project, the students participated fully in the online debate smoothly. Some other learning points from this collaborative project that may need attention are as follows:

- For inter-school online collaborative projects to be successfully implemented, there must be commitment from the teachers of both countries.
- A flexible project roadmap should be drawn up. This roadmap shows the milestones and expectations of the project. It also serves as a guideline for teachers to facilitate the students' project as well as assist the students in checking on how far they have progressed in the schedule.
- Inter-school online collaborative projects should be integrated into the school's formal curriculum. This is to promote collaboration among teachers and students, interaction between teachers and students and between students and students.

Overall, this was the first study which incorporated technology and project work into the secondary school classroom in Singapore. It provided a novel and innovative way of using technology for borderless classrooms in Singapore's secondary schools. Instead of using an MSN Web Group for the traditional purpose of sharing files and documents, it provided another dimension to teaching and learning by using the Web Group for writing and presenting argumentation in collaborative projects. Instead of using MSN Chat for chit-chatting with friends, it leveraged on the instantaneous chat function for exchange of ideas leading to live debate among Singaporean and German students. All in all, this mode of teaching and learning had created more fun and authenticity for these secondary school students in Singapore.

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Mr Yip Meng Fai is a teacher in Pioneer Secondary School, Singapore. His teaching interests include Life Sciences and interdisciplinary project work.

Dr Quek Choon Lang is an Assistant Professor in the Instructional Science Academic Group at the National Institute of Education, Nanyang Technological University. Her research interests include classroom learning environments, gifted education, information technology in education and interdisciplinary curriculum studies.

Miss Britta Seet Ying Ling is a teacher in Pioneer Secondary School. She teaches Chemistry and Computer Applications. Her interests include educational research.

Dr Angela F. L. Wong is an Associate Professor in the Instructional Science Academic Group, National Institute of Education, Nanyang Technological University, Singapore. She is also the Associate Dean in charge of the Practicum component for all the teacher-training programmes. She currently lectures in teaching methodology and instructional technology. Her areas of research interests include learning environments, science education and Practicum-related issues in teacher education.

## References

- Baker, M. (2002). Forms of cooperation in dyadic problem-solving. In P. Salembier & H. Benchechroun (Eds), *Cooperation and Complexity*. Paris: Hermes.
- Crook, C. (2000). Motivation and the ecology of collaborative learning. In R. Joiner, K. Littleton, D. Faulkner & D. Miell (Eds), *Rethinking Collaborative Learning*. London: Free Association Books.
- Häkkinen, P. (2002). *History and Development of Collaborative Learning and E-Learning in Europe: Lessons Learned*. Paper presented at the 2nd Asia–Europe Classroom International Teachers' Conference, Tampere, Finland.
- Jacobs, H. H. (1989). *Interdisciplinary Curriculum: Design and Implementation*. USA: Edwards Brothers, Inc.
- Jonassen, D. H., Howland, J., Moore, J. & Marra, R. M. (2003). *Learning to Solve Problems with Technology: A Constructivist Perspective*. New Jersey: Prentice Hall, Inc.
- Khan, B. H. (1997). *Web-Based Instruction*. Englewood Cliffs, New Jersey: Educational Technology Publication, Inc.
- Lynch, M. M. (2002). *The Online Educator: A Guide to Creating the Virtual Classroom*. London: Routledge Falmer.
- Ministry of Education (1999). *Project Work Guidelines*. Singapore: Curriculum Planning & Development Division (CPDD) & Testing & Assessment Branch (TAB).
- Palloff, R. M. & Pratt, K. (1998). *Effective Teaching and Learning in the Virtual Classroom*. World Computer Congress: Teleteaching 98, Vienna/Austria and Budapest/Hungary, August.
- Palloff, R. M. & Pratt, K. (2001). *Lessons from the Cyberspace Classroom: The Realities of Online Teaching*. California: John Wiley & Sons, Inc.
- Quek, C. L. & Wong, F. L. A. (2002). Is my project work classroom environment conducive for student collaboration? *Teaching and Learning*, **23**, 107–118.
- Tobin, K. (1998). Qualitative perceptions of learning environments on the world wide web. In B. J. Fraser & K. G. Tobins (Eds), *International Handbook of Science Education* (pp. 139–162). United Kingdom: Kluwer Academic Publishers.