Teacher Collaboration in Integrating Language and Content

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This paper describes a study of the mutual support and cooperation between an English as a second language (ESL) teacher and a content teacher in designing and conducting a unit in a secondary school in Vancouver. The unit was based on Mohan's (1986) Knowledge Framework, a conceptual framework which systematically integrates language and content and served as a common metaphor for the collaborating teachers.

The participants of the study were an ESL teacher, a computer studies teacher, and eleven recent immigrant students. Research techniques included classroom observation; examination of documents including the unit plan, assignments both electronic and hard copies; and discussions with the students and teachers.

Results showed that the Knowledge Framework is a powerful tool for effecting teacher collaboration and for enabling ESL students to systematically learn academic English, read a novel, acquire computer literacy, develop thinking skills, and socialize into the English-speaking classroom.

PURPOSE OF THE STUDY

This paper describes a case study (Merriam, 1985) conducted in an English as a second language (ESL) class in a secondary school in Vancouver, British Columbia. The objectives of the study were to explore the value of the Knowledge Framework (Mohan, 1986) (1) in introducing a novel to ESL students, (2) in integrating ESL student learning of language, content, and thinking skills, and (3) in effecting teacher collaboration in a specific situation.

Since multicultural classes have become a common phenomenon in North American schools, the main goal of education systems should be to enable all students, both English-speaking and ESL, to be academically successful in content-area classrooms where English is the medium of learning. However, research shows that ESL students may take up to seven or eight years (Collier, 1987; Cummins 1984) to master a second language for schooling. To delay academic instruction until ESL students have mastered basic English skills is to deprive them of equal opportunities to access school knowledge. Teachers must find ways to enable ESL students to access academic knowledge and develop cognitive skills while they are acquiring proficiency in English. They must employ approaches which incorporate content goals and integrate language

and content (Mohan 1986). However, content-area teachers often seem reluctant to use approaches which are perceived to be a means of fostering the work of the English teacher (Langer & Applebee, 1987), and language teachers do not necessarily have the expertise to teach content-area subject matter, particularly at the secondary level. One solution to the problem is for ESL and content teachers to collaborate in designing and conducting units and classroom tasks. This paper describes how an ESL teacher cooperated with a computer studies teacher in teaching a group of ESL students an English literature unit. They used the computer to reinforce the learning of the unit while teaching computer literacy. It also discusses the value of the Knowledge Framework in effecting teacher collaboration and student learning.

As Mohan (1991) points out, the integration of language and content requires careful systematic planning and monitoring. Such a program has to be so designed that it guides students through the use of the full functional range of language, and enables students to understand how language form is related to meaning in content-area subject matter (Swain, 1988). The program should "help students develop reading and thinking strategies needed to read academic texts in their content classes in order to learn new subject matter" (Shih, 1992). The Knowledge Framework (Mohan, 1986) provides both a model for integrating language and content and a common set of metaphors for communication between the collaborating teachers. A brief description of the Knowledge Framework follows.

The Knowledge Framework

According to Mohan (1986), there are certain knowledge structures which are common across content areas. They include classification, principles, evaluation, description, temporal sequence, and choice. These structures are common across languages. They are thinking skills which are translated into rhetorical patterns in oral discourse and written text. They can also be represented in graphic form, e.g., classification can be expressed in the form of a classification tree, a chart, or a web, a large number of which are common across languages (Tang, in press). Research results indicate that graphics can enhance ESL student learning of content knowledge (Early, Mohan & Hooper, 1989; Tang, 1991, 1992a, 1992b). Each knowledge structure is characterized by a specific set of linguistic devices. For example, *As a result of,... The cause of,... Results in,... Because,* are language devices of cause/effect or principles. Thus, the Knowledge Framework enables the teacher to systematically develop language skills and content knowledge in ESL

students. Because knowledge structures are common across content areas, the Knowledge Framework permits the encoding and retrieval of knowledge across the curriculum.

THE STUDY

The Setting of the Study

The participants of the study were an ESL teacher, a computer studies teacher, and an ESL class in a secondary school. The class was made up of eleven recent immigrants, five boys and six girls, from different countries: Hong Kong (2), India (4), Mexico (2), Singapore (1), and Vietnam (2). Their length of residence in Canada ranged from one month to just over a year. They were all recent immigrants learning in an English-speaking environment for the first time. The study was conducted in the natural setting of an ESL classroom and a Macintosh computer laboratory (Mac Lab). Methods included participant observation (Spradley, 1980), examination of unit plans, textbooks, and student assignments, interviewing students, informal discussion with the teachers, and video-taping classes. The unit of study took place three hours a week over a period of about five months. In all, 44 lessons were observed, 23 in the ESL classroom and 21 in the Mac Lab. The ESL teacher cooperated with the computer studies teacher in designing the computer tasks so that the second part grew out of, and reinforced, the first.

Description of the Unit

The unit entitled *Travelling Alone Across the Atlantic* was based on a novel *Alone on the Atlantic: The Clare Francis Story* (Vincent, 1982). Its objectives were to enable the students (1) to understand an English novel, (2) to learn and practise the skills of reading and writing academic language and academic graphics as defined by the Knowledge Framework, (3) to acquire computer literacy, and to take advantage of the computer to learn process writing, and (4) to socialize into an English-speaking school system.

The teachers sought to teach English and language skills through the novel and the computer. They saw the computer as an opportunity for the students to reinforce their learning of the novel and to practise the skills of writing and editing their work. The computer has been found to enhance the teaching of writing by facilitating "the well-established three prerequisites for the improvement of writing: more practice over time, more focused practice, and more focused feedback. . . [Students also] become

engaged in an interactive process" (Brown, Phillips, & Stephens, 1993, p. 289). Indeed, one of the very real needs of students in the 1990s is "the ability to understand and make use of computers as tools for exploring content through writing" (Brown et al., 1993, p. 288). The tasks developed around the novel provided the content for teaching computer skills.

Both teachers used the Knowledge Framework to organize their lessons, to develop tasks, and to effect the integration of language and content. The ESL teacher explored the story through a sequence of problem solving tasks which involved and modelled the various thinking skills of classification, description, cause-effect, etc. She also systematically drew the students' attention to the linguistic devices of each knowledge structure. Moreover, she used classification trees, maps, cause-effect diagrams, etc. to lower the language barrier for the students, to enhance the visual impact, and to make the link in the integration. The computer studies teacher created similar or related tasks on the computer so that to learn computer skills, the students interacted with tasks which involved the same thinking skills.

Teacher Collaboration

In designing the unit, the ESL teacher developed classroom tasks according to the Knowledge Framework. Figure 1 is an overview of the unit. The overview guided the ESL teacher's choice of information, knowledge structure, graphic form, language items, and classroom tasks.

FIGURE 1. Overview of the Unit:
Travelling Alone Across the Atlantic

CLASSIFICATION	PRINCIPLES	EVALUATION
Classifying parts of a sailboat types of sails types of wind types of navigational equipment types of sea animals types of jobs to be done	Rules for sailing alone (showing cause/effect relations, reasons)	Selecting (drawing conclusions) the best route to take Measuring the impact of the weather on the emotion of the sailor
Labelling diagrams Describing Noting similarities and differences in maps, pictures, diagrams/plans	Chronological order of the route; noting/showing position The plot—detecting sequence of events	Deciding what to do after the self-steering gear breaks
DESCRIPTION	SEQUENCE	CHOICE

Cooperatively with the computer studies teacher, the ESL teacher planned the contents and sequence of the instructional materials to be created and transferred on to *Hypercard* for Macintosh computers. *Hypercard* is a software tool which "provides new ways to organize, display, and navigate through information" (Markman, 1988, p. 333) on the computer. It is made up of a "stack" of screens, or, in the program's metaphor, "cards" arranged one behind another. The ESL teacher designed a list of tasks, somewhat like a wish list, and presented it to the computer studies teacher who decided on what was feasible and what was not. Since this was not the first time the teachers had worked collaboratively, the ESL teacher was aware of the type of task that could successfully appear on the computer screen. They had only one formal meeting for discussion as no collaboration time was built in. However, they did meet informally at the end of each Mac Lab session when they discussed the specific tasks as well as the format and content of the information for the following lesson. The sequence of tasks included labelling a diagram, completing a diagram, and constructing a paragraph based on a diagram. The computer studies teacher decided on the computer tasks, e.g., creating cards, copying diagrams on the card, and using different tools. The end product was a stack of cards which the students had created showing their understanding of the novel, their academic language proficiency, and their computer skills.

Classroom Tasks

The first part of the unit consisted of the first reading of the novel. It was mainly reading for pleasure and comprehension, i.e., to find out what happened, and to get a feeling for character and setting (Law & Eckes, 1990). The teacher helped the students to explore the story through a series of tasks that involved various thinking skills or knowledge structures. She employed graphic representation of knowledge structures in every stage of the unit and lesson: to activate and build background knowledge, to introduce the book, to unfold the story, to interpret events, to draw students' attention to the linguistic devices of each knowledge structure, and to help the students to write. She consistently used the same graphic form for the same knowledge structure so as to provide a schema for the students to access again and again. She also emphasized the linguistic devices characteristic of each knowledge structure so that students would use the appropriate language when they came across the same graphic form. She set different types of classroom tasks, oral, written, individual, cooperative, graphic, reading, etc., to suit the different learning styles of different students. Each task was based on, and modelled, a knowledge structure. The tasks involved both graphics and text. The following sections describe some of the tasks.

Classification tasks

Classification was represented in familiar graphic forms. The teacher used the format of a classification tree and the illustrations in the novel (Vincent, 1982, pp. 18, 19, 32) to familiarize the students with the navigational equipment mentioned in the story. They examined the pictures in the book. Then the teacher referred to the classification tree on the chalk board, explained it, and together with the students put appropriate writing in the cells. While completing the graphic, she explained the function of each piece of equipment and asked the students to supply answers. The students had to read the text and look for the graphic information that is contained in the text (Reinking, 1986). The completed graphic appears in Figure 2. The graphic served to draw the students' attention to the text structure and to highlight the vocabulary that was important for the understanding of the novel. At the same time, it gave the teacher an opportunity to point out the linguistics devices used for classification, e.g., *There are two kinds/types, . . . Can be divided into.* She also drew the students' attention to language of description, e.g., *It is like a. . . It is for locating,* etc.

FIGURE 2. Classification of Navigational Equipment: Graphic
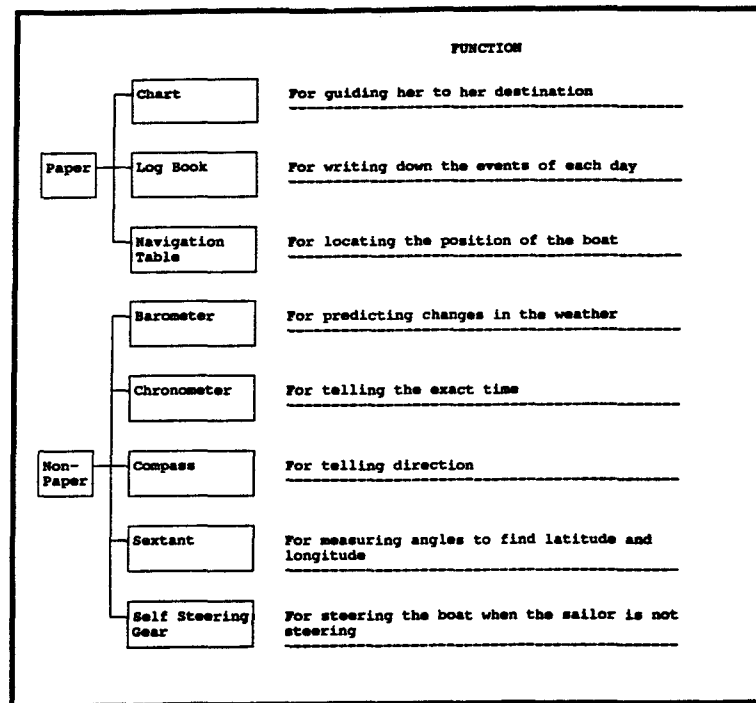
To reinforce the learning of the language of classification and the content, the students did a completion exercise (see Figure 3). The teacher provided the format while the students filled in content words, which could be taken straight from the classification tree. She drew their attention to the words *kind*, *type*, and *sort*, and phrases such as *is/are used for*, *is/are made of*, etc. She also pointed out the appropriate punctuation marks, such as the colon, the comma, and the period, as well as the singular and plural verb forms.

FIGURE 3. Classification of Navigational Equipment: Text

Task 2: Completion
There are _____ _____ of navigational equipment that are made of paper: _____,
_____, and _____.
There are _____ _____ of navigational equipment that are not made of paper:
_____, _____, _____, and _____.
A _____ is used for ___ing _____.
_____ are used for ___ing _____.

The graphic representation of classification provided a pattern, a predictable way for the students to interpret discourse and to think (Horowitz, 1987). Each task provided an environment for them to interact with discourse thus enhancing and consolidating their understanding of discourse structures, their knowledge of the topic, and their development of language proficiency.

Description tasks

To describe the happenings of the trip, the teacher used a web-like graphic (see Figure 4) for each day. The purpose of recycling the same graphic form was to provide a schema to which students could return. It also allowed the teacher to ask the same set of questions, about the weather, the ocean, the boat, and the sailor's feelings, to elicit language of description repeatedly. The first one was built on the chalk board by the teacher. Cooperatively with the whole group of students, she built up the webs for the third, fourth, fifth, and sixth day side by side on the chalk board. She referred the students to the novel to look for answers to the questions and drew their attention to the linguistic devices of description and comparison, e.g., *strong gale*, *moderate breeze*, *the most violent*, *the worst*. She also showed them how the wind affected the ocean. The

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ocean which *was angry* on Day 3 *became quieter* on Day 4, *was calm* on Day 5, and *had huge waves* on Day 6. In the same way, she used verbs in the past tense, adjectives, adverbs, and adjectival and adverbial phrases to describe the sailor's tasks and mood. By making the students interact with the graphic and the novel, the teacher was not only making the novel easier for the students to understand, but she was also exposing them to real language of description, and helping them to make the connection between the graphic and the text. She was also empowering them to manage reading tasks independently. She made sure that they had sufficient exposure to the graphic form, the linguistic devices, and practice sessions before requiring them to complete the rest of the webs in groups, in pairs, or individually.

FIGURE 4. Description of the Trip: Graphic
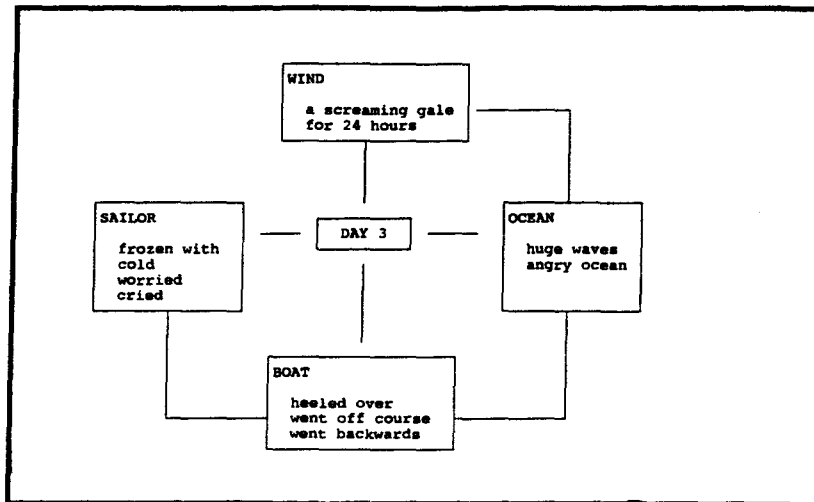
Apart from building graphics from text, the students were also taught to construct text passages from graphics. These two types of tasks complemented one another. Following the completion of the web, the students entered the events of the day in a log book. They wrote a short paragraph describing a picture in the novel or the graphic they had just completed using the information and linguistic devices suggested in the graphic (see Figure 5).

FIGURE 5. Description of the Trip: Student Text

DAY 3 June 9, 1976

P. 25   This photo shows a miserable day on the ocean. The wind is screaming and the sea is angry. Clare is feeling frozen and very wet.

WIND: The gale blew for 24 hours.
OCEAN: There were huge waves.
BOAT: The boat heeled over.
      It went off course.
      It went backwards.
THE SAILOR: Clare had a long miserable day.
           She could not sleep.
           She was nearly deaf from the noise and frozen with cold.

Cause-effect and sequence tasks

The teacher used charts and tables representing other knowledge structures, e.g., sequence and cause-effect, to effect the integration of language and content learning.   She showed cause-effect relationships by combining sentences from the two columns of the table while drawing the students' attention to the linguistic devices of cause-effect, e.g., *Clare forgot to wear a safety harness so she fell and hit her head. Clare fell and hit her head because she forgot to wear a safety harness.*   Then, the students generated a set of rules for the sailor sailing alone, e.g., *Wear a safety harness at all times so you won't fall and hit your head.*

The teacher also designed tasks which brought the story together, e.g., sequencing events of the whole story.   Two of the graphics which she used were a line graph and a time line in the form of a map.   Both the line graph and the map showed the trip from beginning to end.   The line graph showed the degree of excitement of each day on the Atlantic while the map showed the location of the boat throughout the trip.   The map or time line was another visual way to achieve whole literacy contexts while expanding students' understanding of text organization (Sinatra, 1991).   To plot the graph, the students referred to the web-like graphics of each day to decide on the degree of excitement.   To mark the location of the boat on the map, they had to refer to the text.   Both these tasks helped to link the different parts into one whole story. They also encouraged the students to interact with, and make the connection between, the graphic and text form.

These graphic tasks meet the three general aims for working with a topic: each task "makes communication clearer and lowers the language barrier. . . .   It is an opportunity for the development of

language. . . . It develops general thinking or process skills. . ." (Mohan, 1986, p. 27). I should point out that the tasks described above represent a few of many classroom tasks the students encountered. There were others. Many of these were converted into computer tasks discussed in the following section.

Computer Laboratory Tasks

The conduct of this part of the unit followed a team teaching arrangement with the computer studies teacher in the "Team Leader" or "Chief Instructor" role (Bailey, Dale, & Squire, 1992) as far as computer skills teaching was concerned. The ESL teacher, who was responsible for suggesting language tasks, answered questions when they arose and checked student assignments. It was conducted in the Mac Lab where fifteen Macintosh Classic computers were connected to a server in a network. Each student was assigned a machine and given a three-and-a-half-inch diskette. In the first lesson, the computer studies teacher introduced the students to *Hypercard*. He explained the use of the diskette, and familiarized them with the functions listed on the computer screen, such as *Tools, Objects,* and *Files.*

The computer studies teacher followed the same pattern with minor variations in each lesson. He projected his computer screen on the overhead projector. He then explained the computer tasks and demonstrated on his computer the process from beginning to end. Often, he put the procedure on the chalk board and went over each step drawing diagrams as he explained. When the task had been successfully completed, he went to one of the students' computers and demonstrated the steps of the task over again while he repeated all the steps orally and asked occasional questions. The students then went to their own computers to perform the computer task that had been demonstrated twice. They performed an assigned task which involved copying text passages, constructing text passages, labelling diagrams, or answering questions. The teachers then checked their work and gave immediate feedback.

Computer tasks

The computer skills which the students were expected to learn included the following: accessing a program on the microcomputer; demonstrating on-screen text and icon applications; accessing a file; demonstrating typing and drawing; moving the mouse; creating and accessing a card; making, naming, and moving buttons of various shapes, sizes, and types; making, moving, and manipulating fields; choosing desirable fonts; converting teacher's file to own file, and

demonstrating the working of the programs. An example of a card and a computer task is found in Figure 6.

FIGURE 6. An Example of a Card

The Boat:

mast
rigging
jib
spinnaker
mainsail
self-steering gear
wind vane
tiller
stern
topsides
keel
bow
rudder

These parts help steer Clare's b   2

The parts that help claree's boat are:
wind vane
tiller and rudder

These parts help catch the wind:

The parts that help clare's boat to catch the wind are:

These are parts of the hull:

The parts that help clare's boat to the hull are:

Knowledge Framework tasks

The tasks which the students were expected to perform and the knowledge which they were expected to acquire were all based on graphics. They included labelling diagrams and maps, completing classification trees, evaluation charts, and cause-effect charts, constructing sentences to show cause-effect, and writing paragraphs to describe objects and people. These tasks were extensions of the classroom tasks described earlier. Each task involved and modelled a knowledge structure and its specific linguistic devices (see Figure 7). The students copied, translated, rewrote, or summarized information they had learned and put it into a similar or different format on the computer. They recalled information in one graphic form and put it in another graphic form, or translated graphic information into a paragraph or vice versa. They were again reminded of the linguistic devices, and encouraged to use them in writing paragraphs.

FIGURE 7. Knowledge Structure Related Hypercard Tasks

CLASSIFICATION	PRINCIPLES	EVALUATION
1. Title: Parts of Clare's boat Graphic: Diagram of the boat Task: Classifying parts of boat by function 2. Title: Sea life Graphic: Tree graph Task: Classifying sea animals - completion exercise	1. Title: Clare's tools Graphic: Pictures of tools Task: Write a paragraph on why the tool was important 2. Title: The rules Graphic: Cause-effect table Task: List an action and the result of that action	1. Title: Home life versus ocean life Graphic: Comparison table Task: Evaluate the desirability of home life and ocean life
1. Title: The sailor Graphic: Photograph scanned from book Task: Describe Clare and Jacques 2. Title: Inside Clare's boat Graphic: Plan of boat Task: Describe the boat	1. Title: The route Graphic: Outline of map Task: Describe Clare's route in chronological order Task: Click on a numbered day along Clare's route and read the log book.	1. Title: The Northern or Southern Route? Graphic: Flowchart with decision diamonds Task: Write a statement to represent the possible decision in each diamond on the flowchart
DESCRIPTION	SEQUENCE	CHOICE

The computer studies teacher integrated the teaching of language and computer skills in various ways. His main aim related "to the cognitive aspect of the structure of knowledge" (Mohan, 1986, p. 40). He was also aware of the principal knowledge structure of each task and used the linguistic devices characteristic of that knowledge structure. In presenting computer skills, e.g., different steps of copying a card, he used the language of sequence. In presenting knowledge, e.g., the trip across the Atlantic, he again used the language of sequence. He also pointed out that this task was an extension of another task they had completed in the classroom. In this way, he made the link among language, knowledge of the novel, and computer skills, and he did it through the Knowledge Framework.

DISCUSSION

This was the first time this group of students learned about the Knowledge Framework. Discussions with the students showed that

they accepted it as a Canadian method of teaching. They could identify graphics representing each knowledge structure. Examination of their written and computer tasks indicated that all the students could understand the story. They understood the sequence of events, their causes and effects, and the plot of the story. They could describe the main characters. They appreciated the excitement in the story, and seemed to understand the feelings of the characters. Most of them found the novel interesting. Their understanding indicates that novels can be introduced to newly arrived ESL students with limited English proficiency. All the techniques employed and tasks set helped the students to read the story. The graphic representations lowered the language barrier and provided a schema for them to predict the story. The Knowledge Framework helped the teacher to present authentic material (Christensen, 1993) and it helped the students to understand the story.

As the ESL teacher pointed out, the Knowledge Framework generates endless possibilities: creativity is endless. To use her own words, "I find myself looking at print in books intended for ESL students and wondering how the students perceive it. Much of what I see seems linear, flat and uni-dimensional. . . . By using the Knowledge Framework approach, I can use the print from the text as part of a multi-dimensional experience that utilizes more aspects of language and motivates the students to use a greater variety of thinking skills." Exploring it with the Knowledge Framework, the story ceases to be words on paper. Comprehension ceases to begin and end with answering display questions. The teacher could take the students away from the classroom, take them to the ocean to experience ocean life with the sailor and shake them up a little. The Knowledge Framework permits all these. Both teachers find the Knowledge Framework a powerful tool for lesson planning and making instructional materials more meaningful for the students.

Examination of student writing evidenced that the awareness of knowledge structures and their graphic representations helped in the development of proficiency in both reading and writing. Linguistically, the students had learned or were learning to construct sentences showing cause-effect relations and evaluating people's mood, and to write paragraphs classifying objects, describing people and objects, and sequencing events. It is true that there were mistakes in their writing, nevertheless, the paragraphs were cohesive texts because all the students had attempted to use the linguistic devices the teacher had explicitly taught. Moreover, writing the paragraphs on the computer encouraged them to draft,

review, evaluate, and rewrite, sometimes when prompted by the teacher, sometimes after asking another student, sometimes on their own. They kept changing their writing either to make it look better or to practise a function key on the computer.

All the students became computer literate in varying degrees. The amount they learned and retained depended on the individual student. However, at the end of the unit, all the students had a complete stack of cards. They could do all the basic tasks such as starting up and shutting down, moving from card to card using command keys, typing, changing font size and type faces, erasing, and following commands. They could make line drawings to decorate their cards and they could change special effect specifications.

The teacher's verbal instructions, demonstrations, and repetitions helped the students to become more aware of what they were doing in terms of both computer skills and knowledge of the novel. Moreover, to perform the various computer tasks, they had to stay longer with the text they had created and become more involved with it. Because of the involvement, many of them were better able to articulate what they were learning (Brown *et al.*, 1993). Many of them could verbalize the procedure of certain computer tasks.

In short, the ESL teacher succeeded in effecting ESL student learning of a novel and developing of language proficiency simultaneously. The computer studies teacher, using the same content and similar knowledge frameworks tasks, succeeded in effecting a degree of computer literacy. These findings attest to the value of the unit in ESL student learning. However, learning of knowledge and skills was not their only gain. Their language socialization (Schieffelin & Ochs, 1986) should not be overlooked.

The unit, particularly the Mac Lab, appeared to have the potential for enhancing language socialization. In the first place, in a collaborative teaching arrangement like this, the students were exposed to interaction between two proficient English-speaking models, and to examples of attention-getting, turn-taking, and clarification. On several occasions, the two teachers negotiated meaning aloud when the ESL teacher asked questions to confirm her instruction or when they solved problems raised by students. The classroom practices also "played a part in initiating the ESL students into the social practices or academic language functions of the English-speaking classroom. These practices included listening to and reading academic discourse to comprehend knowledge and speaking and writing academic discourse to express content" (Tang, 1993, p. 147). Moreover, the unit helped to acculturate the students

into the Canadian classroom. The atmosphere the teachers had created was friendly and non-threatening. The students soon learned to respond to the teachers' jokes, and they seemed more willing to interact with their peers in the Mac Lab than in the classroom. Many factors could have contributed to this phenomenon, e.g., the difference in the setting of the rooms and the tasks, the growing familiarity with friends and teachers, and the chance to demonstrate instead of verbalize an answer, among others. Nevertheless, the students in this study were more willing to ask questions, to initiate dialogue, to contribute to group discussions, and to negotiate with peers in problem solving. In short, they had gone a step further in the process of socializing into the cultural, academic, and social practices of the Canadian classroom.

Another advantage of this collaborative teaching set-up was in teacher development. The ESL teacher who was not familiar with the computer was able to learn basic computer skills including how to use *Hypercard*. She recognized the usefulness of the computer and felt more comfortable helping individual students at the end of the unit.

Results indicate that there is much to be gained by collaborative teaching. However, I should point out that several factors contributed to the success of the two partners in effecting student learning and teacher development. Their success was partly because they had chosen to enter into the collaborative teaching arrangement, thus enabling them to work in an atmosphere of trust and mutual respect (Bailey *et al.*, 1992) throughout the unit, and partly because they were both familiar with the Knowledge Framework, which facilitated the dialogue between them.

SUMMARY AND CONCLUSION

Observation of a unit of study based on a novel presented collaboratively by an ESL teacher and a computer studies teacher to a group of recent immigrant students yielded some interesting results. Recent immigrant students could be introduced to novel-reading with some success. They were capable of acquiring computer literacy (in varying degrees), academic language skills, and content knowledge simultaneously. In the study, the students understood the novel (content). They could express their understanding in spoken, written, and graphic form (academic English proficiency). They were also performing tasks and learning to write paragraphs using linguistic devices of classification, description, cause-effect, sequence, evaluation, and choice (the

Knowledge Framework). Moreover, they acquired a degree of computer literacy (computer skills). The novel provides a context for the learning of computer skills; the computer provides the stimulus and classroom tasks for reinforcing and enhancing the learning of academic language and academic skills. And the Knowledge Framework is a powerful instrument for effecting the language-content integration. Furthermore, the students appeared to have gained in their acculturation to the English-speaking classroom. The environment of the computer laboratory facilitates ESL students' socialization and initiation into the new culture. These findings attest to the success of collaborative teaching between the two teachers who used the Knowledge Framework as a common metaphor for teacher collaboration.

However, this paper is only one person's construction of the reality of a small group of recent immigrant students learning a unit of study in one school within a limited time frame. It has demonstrated only one successful attempt of two teachers to effect teacher-teacher collaboration and language-content-computer studies integration using the Knowledge Framework as a tool for communication between teachers, for curriculum design, and for classroom task development for the unit. Further research, particularly action research (Crookes, 1993; Nunan, 1990), by collaborating teachers in various fields using the Knowledge Framework is encouraged.

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