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ORAL INTERACTION AROUND COMPUTERS IN THE PROJECT-ORIENTED CALL CLASSROOM

Gumock Jeon-Ellis, Robert Debski, & Gillian Wigglesworth
University of Melbourne

ABSTRACT

Language teachers need to provide students with a context for genuine communication (Sullivan, 2000). Project-oriented computer-assisted language learning (PrOCALL) attempts to achieve this by orienting learners towards tasks, which encourages them to communicate in the target language while working towards completion of a project (Debski, 2000). The study investigates the oral interaction that takes place in this context.

According to Vygotsky, social interaction mediates cognitive development. Swain's (2000) application of this concept to language learning suggests that collaborative dialogues mirror the moments of language development. Using this framework, the present study identifies "language related episodes" (Swain & Lapkin, 1998) and describes the characteristics of the oral interaction generated by two small groups of French learners working towards the completion of Web pages in a major Australian university. The study also describes instances of "triadic interaction" (van Lier, 2002) involving learners' interactions with each other and with the computer screen.

In sum, the analysis suggests that the PrOCALL context can provide students with opportunities for collaborative dialogues, through which language learning occurs. However, the social context of these interactions is mediated by personal relationships, preferences, and motivations.

INTRODUCTION

The foremost goal of CALL activity is to provide language learners with an environment facilitating communicative situations where they are encouraged to engage in linguistic interactions (Chapelle, 1997). In attempting to achieve this goal, language teachers have increasingly turned to developing collaborative tasks and projects. Project-oriented CALL (PrOCALL) can be seen as a holistic learning approach aimed at employing modern technology to trigger students' ability to act with words and create social realities in and out of the classroom, and thus to facilitate learning. The specific implementation of PrOCALL at the University of Melbourne analysed in the present paper was based on the expectation that the goal-oriented activity of creating Web-based multimodal presentations may promote the need to communicate among students, thereby facilitating language development (Debski, Gassin, & Smith, 1997; Debski, 2000).

In second language (L2) learning and teaching, project-oriented learning is best positioned as a curriculum design within the Communicative Language Teaching (CLT) framework. Its emergence can be linked to critiques of the objectivist curriculum and an increasing emphasis on the negotiated curriculum and the social reality of the L2 classroom (Breen & Candlin, 1980). For some time now, a number of shifts have occurred in CLT in the direction proposed by Breen and Candlin. The "learning task" has become the central focus of many second language classrooms (Candlin & Murphy, 1987; Ellis, 2003; Prabhu, 1987), and learners are recognized as active and creative language users. Learners are also seen as members of a social group involved in managing the learning process (Allwright, 1984), making contributions to the curriculum (Nunan, 1988) and becoming aware of their own personalities and social roles (Candlin, 1987). Legutke and Thomas (1991) considered the role of learning tasks within project-oriented language learning and developed a framework, which served as a guideline for the pedagogical setting of the present research (Debski, 2000).

A number of studies have explored the types of oral communications that students engage in during project-oriented classes that utilize computers. There is evidence that interaction in such classes creates unique learning opportunities and that the language produced in them is linguistically different from the language of more traditional classrooms. Applying discourse research methods, Ewing (2000) found out that PrOCALL classrooms produced a more varied flow of rhetorical relations and students had more control over the linguistic means they used to express themselves. He concluded that PrOCALL classes provided students with opportunities to develop linguistics skills unavailable in traditional L2 classrooms. Mueller-Hartmann (2000) found that project-oriented learning allowed learners to develop and express their views and made meaningful communication possible. Gu (2002) reported that PrOCALL classes in an EFL tertiary setting in China have provided students with authentic interaction with a variety of audiences, increased their levels of input and output, and enhanced motivation, engagement, and willingness to learn collaboratively. Toyoda and Harrison (2002) found that difficulties in understanding each other in a project-oriented classroom triggered negotiation of meaning between learners of Japanese and Japanese native speakers. However, anecdotal evidence also suggests that project-orientation and high levels of motivation to accomplish goals not directly related to language learning may discourage students from using the target language in the classroom, as does the use of technology in the case of students with poor computer skills (Debski, 2000).

The present study investigates the oral interactions of two groups of French language learners occurring in a PrOCALL classroom over a semester. Importantly, the research locates the students' interactions in the social context, thus investigating the oral interaction and students' collaborative relationships as socially embedded activity. The social space in which interactions occur also involves computer screens where students perform actions with words and learn through "perception-in-action" (van Lier, 2002, p. 147). Another emphasis of the research is, therefore, on the impact of the computer on creating learning opportunities.

ACTIVITY AND ORAL INTERACTION: DESCRIBING L2 LEARNING AS EMBEDDED IN ACTIVITY

Second language research has valued learner-centered collaborative approaches for some time. It is now almost axiomatic to say that language learning is a co-constructed process of communication skills (Meskill, 1999). Second language learning takes place while students interact with each other, or with the teacher, through participating in task-based collaborative activities in the classroom. These activities are important because they provide meaningful contexts for L2 development. Meskill highlights this point:

> The oral/aural negotiational aspect of teacher and task supported student-student configurations is seen as a powerful venue for second language acquisition to occur. Such configurations, in combination with well-designed and orchestrated language learning tasks, represent opportunities for learners to manipulate interdependent chunks of the target language in complex ways that see immediate, contextual affect. (p. 143)

The emphasis on collaborative language learning is not new and many of the concepts and issues in L2 research have emerged from the study of interaction in collaborative learning environments. Thus, our awareness of the importance of input, negotiation of meaning, noticing, modification, and output is a result of investigating the value and nature of collaboration between learners, between native speakers and non-native speakers, and between L2 learners and their teachers (see Chapelle, 1997; Hall & Verplaetse, 2000, for an overview on interaction studies). The studies have provided important insights into the interactive and negotiation strategies that learners use and the grammatical aspects of languages that L2 learners employ during their interactions (Donato, 1994).

A persisting concern in L2 research has thus been its inclination to focus on the psychological and cognitive at the expense of the social dimensions of language learning, despite widespread recognition of

the importance of the social contexts of learning as one of the major forces of L2 development (e.g., Atkinson, 2002; Donato, 1994; Long, 1997; Rogoff, 1990). This increasing recognition of the importance of the social context of learning has developed in response to approaches positing language learning as a process isolated from the surrounding social factors. Atkinson (2002) conjures up the image of "a cactus in the desert" to describe such approaches in L2 research and argues that progress in language learning depends on success in the efforts made by students to participate in social activities that are carried out in the target language. This implies that, in the case of collaborative classroom situations, L2 learning relies on whether learners become successfully integrated into either a group or the class, or into any implicitly or explicitly existing social relationships within the classroom.

The L2 classroom is a social context to which learners bring themselves and their past experiences, and in which they establish certain relationships and attempt to participate and engage in tasks in ways that best fit their social needs. Thus, describing their activities in relation to the other learners as social beings is an important part of the description of their L2 learning. Extracting production alone for analysis and ignoring the questions how this is achieved and in what environment, can only be part of the equation, because language learning cannot be separated from the activities for which the language is being utilized as a tool (Atkinson, 2002, p. 536). Coughlan and Duff (1994), who investigated the ways students' implemented ESL tasks, suggest this as a strong direction for L2 research:

> We stand to learn a lot about what goes on in the minds and experiences of individual language learners by looking at the activity that emerges from interactive second language situations. Perhaps, through this kind of discourse-based investigation, we will discover that variation in second language acquisition is not entirely *intra*personal -- rather, some answers must reside in the *inter*personal relationships among participants engaged in second language activities, and in subject-task relationships. (p. 190; emphasis in original)

Thus, the description of L2 learning has recently expanded its scope to include "contexts of use" (Meskill, 2005), including perspectives on collaborative relationships, interaction with tasks, and interaction with other tools the learners might utilize.

This inseparable connection of learning with social activity and the social setting in which it is embedded is also acknowledged in CALL research. A number of recent studies have attempted to describe L2 learning in computer-mediated environments from a broader perspective by incorporating a sociocultural approach (e.g., Belz, 2002; Goodfellow & Lamy, 1999; Lee, 2004; Thorne, 2003; Warschauer, 2000). Investigations of social interaction or "conversational spin-off" (Piper, 1986) around computers has also received increasing attention. Recently, van Lier (2002) proposed an ecological-semiotic perspective in which language is learned in social spaces, and which includes considerations of the relationships between people as well as between people and objects such as computers. For example, he noticed a great deal of indicational work occurring in the context of collaborative work in front of a screen. From this perspective, language learning opportunities may arise in "triadic interaction" when reference is made to objects and actions and through meaningful action afforded by the situation. Work at the computer provides unique learning opportunities for meaningful language use and for learning through "perception-in-action" (van Lier, 2002, p. 147). Similarly, Leahy (2004) referred to interaction involving L2 learners and the computer screen as "triangular relationship" (p. 133). She noticed that the triangular relationship led the students to produce a form of shorthand, including incomplete sentences, due to student oral production being intertwined with language on the computer screen. She expressed concern that such low accuracy in interlanguage could be counterproductive for language learning. However, such interactions mediated by gestures and objects could lead to language development if they were accompanied by a transition from using indexical to more symbolic modes of expression over time. Meskill (2005) examined the interactions the teacher orchestrates with children around computers and identified "triadic scaffolds" where the teacher uses the computer screen to motivate and capture learner attention.

Another recent area of research investigation has been on the role of the first language in the second language classroom, and the potential roles it may play. A variety of studies conducted particularly within a sociocultural framework have argued that "the learner uses the L1 as a cognitive tool to help 'scaffold' his/her learning" (Turnbull & Arnett, 2002, p. 206). In particular, it has been found that this can be used in peer-to-peer interaction and that where such assistance is used, it serves a number of different functions:

> By means of the L1 the students enlist each other's interest in the task throughout its performance, or develop strategies for making the task manageable, maintain their focus on the goal of the task, foreground important elements of the task, discuss what needs to be done to solve specific problems, and explicate and build on each others partial solutions to specific problems throughout the task. (Anton & Di Camilla, 1998, p. 321)

Second language learning needs to be explained within the context of the learners' activities, where learners utilize language as well as other tools, and the given conditions of the classroom, to achieve particular goals that are driven by their motivations and intentions. This allows a description of language learning that is "embedded in, and emerging from, the experiences of others in the present (social), the experiences of others from the past (culture), and the immediate experiences of the individual with these others and with the artifacts they constructed" (Lantolf, 2002, p. 104). Ohta (2001) highlights the importance of describing the broader context in the description of oral interaction:

> Because learner's oral participation is embedded in context, and produced in collaboration with other persons and with artifacts of the classroom setting, learner utterances are intimately dependent on these factors. Other persons include the classmates and the classroom teacher with whom the learner interacts during learning activities, as well as those seated around the learner in the classroom, whose utterances and interactions the learner can overhear and appropriate. Artifacts of the classroom setting include the teacher's jottings on the blackboard, overhead transparencies, worksheets and other handouts, and textbook pages. In this view language is not a unique product of just the learner's individual brain, but of a mind that actively draws on the interactive environment of the setting in which language is used. (p. 4)

The present study describes two groups of L2 learners' oral interactions in the context of a PrOCALL classroom where they were required to produce Web-based hypertext as part of a semester-long project. The specific aim of the research was to determine what impact the social setting, including the computer, had on creating learning opportunities for students. The following research questions guided the exploration:

1) What impact has work on projects at the computer had on collaborative relationships between students?
2) What impact have collaborative relationships had on the individual student's use of L2 in oral interactions?
3) What has been the impact of the computer on collaborative relationships and oral interactions?

METHODOLOGY

Setting and Participants

The participants were eight monolingual speakers of English enrolled in a first-year elective unit of French and francophone cultures, and their teacher. The main objective of the course was to develop oral and written communication skills in French through group work on multimedia projects related to the cultural interests of the students. The students formed two groups of three and one group of two and worked on Web pages on topics relating to French and francophone cultures: "The beautiful period [*Belle*

Epoche] in Montmartre," "Brittany," and "New Wave French Cinema." This was a mini-option that represented one of five contact hours and contributed 10% of the total marks of the subject. The class was based on a set of guidelines proposed by Debski (2000):

1) Web-based projects created by students in the target language are central in the classroom.
2) Students select projects that are personally meaningful and motivating.
3) In order to accomplish class objectives, students collaborate in the classroom and outside the classroom using computer-mediated communication.
4) The target language is used pervasively as a vehicle for negotiation of tasks and collaboration.
5) The teaching of form is not scheduled but is driven by student needs, with direct reference to learning tasks.
6) Students share the responsibility for the learning outcomes with their teacher.

The specific tasks designed by the teacher included, for example, evaluation of existing Web sites, brainstorming topics, compiling of keywords to be used to search the Internet, searching for Internet resources, reporting on resources found, designing Web sites, elaborating criteria to be used for a peer review of sites, and presenting sites to students from other groups. The students received a group mark for their Web site, and individual marks for a portfolio, which included their individual contributions to the Web site, a review of another group's site, other work as negotiated with the coordinator (e.g., e-mail correspondence with a partner in France), and participation based on class work and e-mail correspondence with the coordinator.

Two groups, A and B, are the focus of the present study. To provide background information, the students were asked to rate their French skills and experience in hypertext writing using a 5-point Likert scale (excellent, very good, good, fair, poor). Their self-evaluations are report in Table 1:

Table 1. Participant Background

Group	Participants	Self-rated French skills		Experience in hypertext writing[1]	Self-rated hyper-text writing skills[2]
		General	Writing		
A	Alice	v. good	v. good	yes, but in English	fair
	Kelly	excellent	v. good	no experience	fair
	Cathy	good	good	no experience	fair
B	Elisa	excellent	good	no experience	good
	Ruth	good	good	no experience	good
C	Biddy	good-fair[3]	good-fair	no experience	poor
	Karen	fair	fair	no experience	good
	Darren	discontinued			

Procedure

The data were collected over a one-semester period from July to November, 2002. The students met for 1 hour per week and worked consistently in the same groups developing a Web site. Data sources included video and audio recording of the class talk, and of the computer screen, interviews, questionnaires, as well as participant observation. Outcomes of the students' activities (e.g., drafts, Web pages) and a record of the on-line subject Web site were also collected for analysis.

Each group was recorded in each class with a separate video camera, and the computer screen and students' cursor movement and keyboard operation, were recorded simultaneously. This is illustrated in Figure 1:

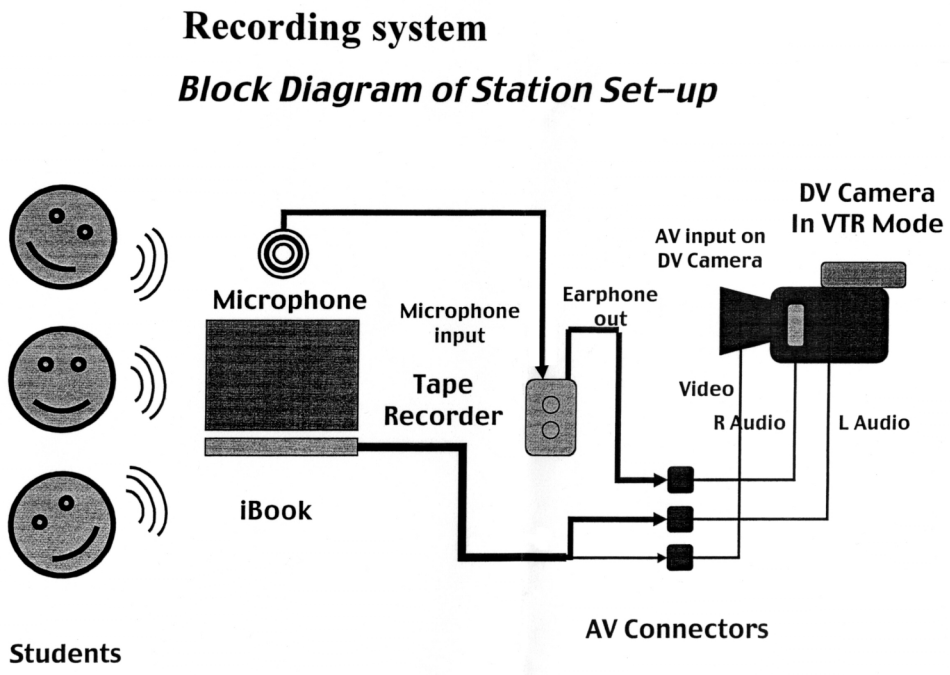

Figure 1. Classroom recording system

In addition to the video recordings, students were interviewed individually during the semester or at the end of the semester using a method that fits comfortably with the concept of "qualitative interviewing" (Mason, 1996). The interviews were designed to obtain in-depth information about the students' hypertext writing processes and were semi-structured and conversational in style. Prior to the interviews being conducted, participants were asked to fill out a questionnaire. This was used to obtain general background information about the participants and also functioned as a warm-up activity through which the participants were "tuned" in discussion about the topics in the interviews. In addition, author Jeon-Ellis was a participant observer in the classroom, acting as the teacher's assistant. In situations where a technical problem occurred, the teacher would approach the researcher and ask for help to resolve the problem; at other times she helped the students directly, or arranged for other technicians to come. Being part of the learning situation with a specific role allowed the establishment of a relationship between the researcher and the students.

Data Analysis

The video/audio recordings were transcribed and the parts spoken in French were translated into English. The interviews were also transcribed. The analysis was qualitative and used the inductive strategies of grounded theory (Strauss & Corbin, 1998). As the analysis proceeded, themes related to the research questions were modified to reflect categories emerging from the data, for example, those related to collaborative relationships or the role of technology in producing learning opportunities. In order to achieve a deeper level of analysis, relationships between the emergent themes were examined. Careful attention was also given to any modifications of emergent themes so that an iterative process was established. The analysis was never linear or straightforward and involved repetition of reviewing and search for counter-evidence or alternative explanation.

The qualitative data analysis program Nudist (Non-numerical Unstructured Data Indexing Searching and Theory-building) was used to assist the processes described above. Qualitative data analysis software can be a useful tool for managing and organizing the different types of unstructured data, for mapping the

relationships between codes, and also for aiding as a prompt search of certain words and text units (Denzin & Lincoln, 2000).

RESULTS AND DISCUSSION

The focus of our analysis is on the behaviours and interactions of two groups (A and B) engaged in composing hypertext in French. Several themes related to the impact of collaborative relationships on generating learning opportunities for students and the role of computers in creating learning opportunities emerged from the data set and they are discussed in this article.

Collaboration at the Computer

Group A consisted of Alice, Kelly, and Cathy. These three students appeared relatively well matched in terms of their skills (see Table 1). Alice and Kelly, two of the three members of this group, used French in their conversation more than the other students throughout the semester. Even when they spoke in English, their interests were often concerned with linguistic problems related to the target language. In the transcripts of their conversations, there are numerous examples of what Swain and Lapkin (1998) term as "language related episodes" (LREs). In example 1, in which Alice, Kelly, and Cathy are browsing French Web sites, and Kelly corrects Alice's pronunciation:

Example 1[4] (Group A, week 4)

1	Kelly	*I'm sure that there's…* [inaudible] *… he's quite famous … is there a songwriter?*
2	Alice	*Yes, ….It's* [spelling] *B, R,…*
3	Kelly	[spelling] *U, A, N, T*
4	Alice	[spelling] U, A, N, T … What?
5	Kelly	It's not easy to say, "Bruant"
6	Alice	Bru-ant
7	Kelly	Bruant
8	Alice	Bruant
9	Kelly	Not "bruyant" (meaning "noisy"), it's a bit like [inaudible] adjectif [inaudible]
10	Alice	Ah, yes, yes.

When Kelly notices that Alice's pronunciation is incorrect, she explains with a counter example (example 1, line 9). Kelly adopts this teaching role spontaneously, and it is well-received by Alice (example 1, line 10). A similar example follows:

Example 2 (Group A, week 11)

1	Alice	"*le profil*" [profile] and "*l'eouvre*" [works: mispronounced]
2	Kelly	"*l'oeuvre*" [correcting pronunciation]
3	Alice	"*l'oeuvre*," sorry, yep. Sorry.

There are numerous cases in the collaborative dialogues between Kelly and Alice where Kelly appears to take on a teaching role: That is, Alice asks a question about a linguistic problem, and Kelly provides an answer.

Example 3 (Group A, week 7)

1	Kelly	I wanted to make a gap so you could … I want to make a picture there of a cat.
2	Alice	Yeah.
3	Kelly	Cause the next bit's about a cat.
4	Alice	Oh, very interesting. What's "*un chat se chauffant au soleil*"?
5	Kelly	Sunning, warming itself in the sun.
6	Alice	Oh, that's so cool.

Similarly, Kelly often draws Alice's attention to uses of the French language. In the following dialogue, although Kelly and Alice were talking mainly in English, notice how Alice's attention was drawn to the word *select* used in French by Kelly:

Example 4 (Group A, week 8)

1	Kelly	*Yes, musician*. Come back here, ok.
2	Alice	What? What are you doing?
3	Kelly	Well, I need to get the musician one in front … okay, alright. *Select, then…*
4	Alice	Click.
5	Kelly	Click?
6	Alice	Try click. Yep. It's *selected.*
7	Kelly	Is it *selected*?
8	Alice	It's *selected.*

As Lantolf (2003) argues, this kind of interaction is a reflection of learning in which imitation is not merely a replication of someone else's utterance, but a reflection of paying attention to certain linguistic features. Here, the distinction between imitation and repetition is important. Repetition is significantly different from imitation in the sense that it does not entail intentionality or agency. Imitations carry constructive and creative intentions of learning as reflected in Alice's imitation (example 4, line 6) which is not a mere replication of what Kelly said in line 3. Alice's verbalization is embedded in a collaborative dialogue triggered by interaction with, or reaction to, the changing states of the computer screen, and consequently, because Kelly responds to this verbalization, Alice's internal effort becomes a shared process. In other words, Alice's internal processes have been mediated through the oral interaction. Example 5 is another occasion when Alice's internal thought processes become part of a collaborative dialogue and a learning opportunity.

Example 5 (Group A, week 11)

1	Kelly	*There we go.*
2	Alice	*That's it?*
3	Kelly	*Yes. So, close everything and then open.*
4	Alice	*Okay, okay, have we done everything?*
5	Kelly	*I think so.*
6	Alice	*I hope so…so, home, open, open, opened* [*ouvrir, ouvert*]

7	Kelly	*Open* [*ouvrez*]?
8	Alice	*Open* [*ouvre*], *I open* [*j'ouvre*], *you open* [*tu ouvres*], *so, open* [*ouvre*].
9	Kelly	*There we go. Let's preview it.*

In example 5, Kelly and Alice are trying to see whether they have been able to save the page they have been working on so they need to reopen the pages. In doing so, Alice produces speech that is clearly private in its purpose (example 5, line 6). That is, she retrieves her knowledge about conjugations of the verb *open* and recites them. Alice neither addresses Kelly, nor anticipates any response from her, but engages verbally in the process of conjugating the verb in an effort to internalize its usage. Alice's verbalization prompts Kelly to assist the effort by suggesting alternative form of the word, "*ouvrez*?" (example 5, line 7), to which Alice responds by overtly illustrating what she is trying to do, thus linking the newly acquired form to activity on the screen.

From these examples, we may reasonably infer that Kelly and Alice interpret the classroom situation as a context for language learning. They are constantly directing each other's attention to linguistic points in each other's utterances, and as a result, create language-learning contexts. Example 6 illustrates Alice's ability to turn even a trivial incident to a language learning moment:

Example 6 (Group A, week 11)

1	Alice	(Sneezes) Excuse me.
2	Kelly	*Bless you.*
3	Alice	What do I say when I sneeze?
4	Alice	*Bless you.*
5	Kelly	*No, me.*
6	Alice	*Oh, you. Excuse me.*
7	Alice	*Excuse me.*

In summary, the collaborative dialogues described so far suggest that, while working at the computer, Alice and Kelly were engaged in a relationship in which the roles of teaching and learning were tacitly agreed and accepted. Alice's internal effort at language learning became merged into the interaction and her internal learning processes are mediated through their verbalisation.

Throughout the description of Alice and Kelly's dialogues, Kelly usually takes the role of peer-expert. She corrects the mistakes that Alice makes in her utterances, draws Alice's attention to linguistic features, and responds to Alice's language queries. She helps her focus on the correct form in her vocalizations and to link language use to activity performed on the computer, thus facilitating learning through "perception-in-action" (van Lier, 2002, p. 147). However, as we will see below, their roles (Kelly as expert, Alice as novice) become less clearly delineated when computer technology itself becomes the object of their dialogues.

Computer as a Trigger Changing Collaborative Relationships

When complex technological matters become the objects of their dialogues, Kelly and Alice often resort to speaking English, and Kelly is no longer the peer-expert -- in fact, in example 7, where the teacher is explaining how to save images on the Internet onto individual files, Alice adopts this role:

Example 7 (Group A, week 7)

1	Teacher	*One silly thing…sometimes when you've looked for pictures on the Web and you put the*
2		*pictures in your webpages, it's very important to ensure that you've saved the picture's*
3		*file in the same fold as your text, because if you don't, when you move the text, the*
4		*picture won't appear. So you have to save everything in a folder. And it's good to have a*
5		*folder within your folder called IMG with your pictures.*
6	Alice	Quite clear…
7	Kelly	How do I do it?
8	Alice	Go down…click and hold an image…there it is…[inaudible], pictures.
9	Kelly	Downloading it…
10	Alice	Okay, now we need to put it in a good place…yes. This is, damn it. This is not 14.
11		Cause, remember how we had to save it?
12	Kelly	Oh…
13	Alice	It's alright. It doesn't matter…we can open our own folder…Montmartre?
14	Kelly	Yep.
15	Alice	Create…
16	Kelly	[inaudible] sounds good to me.

Not only has Alice's role changed to become a more expert one, but she and Kelly stopped speaking French, even though the teacher's instructions were in French. Thus while there was a strong tendency to speak French among students in the class, this does not appear to be the case when they are engaged in solving technological problems. Leahy (2004) also found that problems with technology acted as triggers for switching to the L1 in a classroom where the use of L2 otherwise prevailed for communication around computers. In example 8, notice Alice's switch to English in line 6.

Example 8 (Group A, week 7)

1	Alice	*It's a cabaret bar, more like a café.*
2	Elise	*Like Brunswick Street.*
3	Alice	*Yeah, but much cooler.*
4	Elisa	*It's really good.*
5	Kelly	*Good bye.*
6	Alice	*See you later*...What were we looking for?
7	Kelly	We were looking for how to copy the whole folder onto the disk.

8	Alice	How do we do that ?
9	Kelly	We can do it. Can we go in there and do it. We need, like, "my computer."
10	Alice	I know…stop it, you stupid. Oh, I know, I know. No, I don't. What am I doing … and then
11		we go to this, and…
12	Kelly	And copy.
13	Alice	Move! Do not [inaudible]
14	Kelly	No, go "edit," "copy," and then go into "untitled."
15	Alice	There is no "untitled"
16	Kelly	Is it in "desktop" or something
17	Alice	Oh, yeah, it's always desktop.
18	Kelly	I think we're in "documents" at the moment. We need to get out of "documents"
19	Alice	Oh, we aren't in…
20	Kelly	Applications or whatever, get out of that. No…
21	Alice	oops.
22	Kelly	Oh, can we just click on "untitled"?
23	Alice	Oh yes, we can.
24	Kelly	And then just paste in there?
25	Alice	We sure can.
26	Kelly	Paste.
27	Alice	*Oh, it doesn't work.* Show clipboard…*yes. You, I want you to click, you, Oh why can't I...*
28	Kelly	*Steven* [the teacher], *how can we put the folder on diskette?*
29	Teacher	*on the diskette?*

In example 8, lines 1-6, Alice is talking to Elisa (group B) about her topic, speaking French. Then turning back to the task at hand, she switches to English (example 8, line 6), focusing on the task of copying a folder (example 8, line 7). This time, Kelly is guiding the activity, and in trying to complete this technological task, both speak English, reverting to French as the teacher approaches.

The well-established context of language learning in Alice and Kelly's mutual collaboration is not stable when they are engaged in unfamiliar technological problems. As a consequence, during these episodes, opportunities for language learning become rather scarce.

However, this is not the only direction the student interaction takes when a technological problem occurs. In the following talk, a linguistic problem is related to a technological one.

Example 9 (Group A, week 7)

1	Kelly	what's a "*champ de text*" [text field]?
2	Alice	Like a text box? Maybe that's a text box.

3	Kelly	Oh, maybe … "*une zone de texte*"…
4	Alice	Okay, I know. We'll open two simultaneously so we can see what one means.
5	Kelly	Okay.

In example 9, neither of the two students is in a teaching or leading role. Rather, both are explorers with equally low expertise, as they do not know what functions the program can perform. Furthermore, the program is a French version, and they often encounter new French words or phrases in the menu bars of the program. In this case, an object of learning emerges. In the talk above, the emerged object of learning is a computer term, *champ de text* (example 9, line 1), which the students came across while exploring the HTML authoring program. When Alice's answer is not convincing (example 9, line 2), Kelly wonders about another similar term (example 9, line 3: *une zone de texte*? [Isn't it textbox?]). Alice does not know the answer. However, she is able to suggest a way to find out the meanings of the terms, that is, to see the two menu functions that the words "*champ de text*" and "*une zone de texte*" indicate respectively (example 9, line 4).

Example 9 is different from those described earlier in the sense that the two students are dealing with dual learning objectives: to learn the meaning of the words (which are computer specific terms) and to learn how to use the functions of the program that the words are indicating. The role of the computer in this case is twofold: It is both the source of the linguistic problems or "accidents" (Barson, 1997), and it mediates Kelly and Alice's language learning by providing a tool to explore the language and to link meaning to activity, another example of learning through "perception-in-action" (van Lier, 2002, p. 147). In other words, the computer itself is both the object of learning, and a tool for learning language. In this attempt to utilize the program both as a source and a tool for language learning, Alice and Kelly form a relationship in which they have equal expertise as explorers. Example 10 is similar:

Example 10 (Group A, week 7)

1	Alice	Okay, so we have to go to…
2	Kelly	"paste" … "addition"?
3	Alice	Oh, what's paste? "*Coller*" [Paste].
4	Kelly	*Coller*?
5	Alice	Cause "paste" is after "copy"

In example 10, Alice and Kelly need to find the French word for "paste" in the menu, which they find through using the usual sequence on the menu bar of the program (where "paste" appears under "copy" in the Edit menu).

We have seen that for Alice and Kelly, the PrOCALL classroom provides a range of opportunities for learning and that this is clearly achieved through their collaborative interaction. We have also seen how activity occurring on the computer screen changes relationships between learners, and affects the language they use and the learning opportunities they experience. The third member of Group A, Cathy, is less fortunate. As an outsider to the group, she has far fewer opportunities to participate in these kinds of activities and to learn.

Exclusion in the PrOCALL Classroom

Overall, group A did not seem to encounter major conflicts in making decisions or concerning any other issues related to the tasks. However, Kelly was explicit in her dissatisfaction with the group work and saw Cathy as an impediment since she appeared less committed and was frequently absent.

Example 11 (Interview, October 11, 2002)

1	Kelly	The text that Alice and I have written … we put it into colors and divided up into
2		pages, and we've made some links between pages but we haven't got Cathy's contribution.
3		Remember she hasn't been here for a while so we've been behind with that. […]
4	Int.	I see. How are you doing with working in the group?
5	Kelly	It's not too bad, but I find group work really difficult because… […] I'd like to
6		feel I have control, not like being bossy, but I like everything's organized. But sometimes it
7		can be unpredictable. For example, when Alice and I planned to finish it off on Wednesday
8		and then Cathy didn't turn up. We didn't … so, we couldn't finish. I just find it very stressful
9		on the whole process […]

Notice Kelly's use of the pronoun *we* referring to herself and Alice, and her exclusion of Cathy in example 11, lines 1, 2, 3, and 8 by referring to her as "Cathy" or "she." The transcripts reveal that in general Cathy is not included in the talk, and her role is minimal:

Example 12 (Group A, week 5)

1	Teacher	[explains about Website evaluation criteria] *... there are ways to limit the downloading*
2		*time, to simplify by reducing the definition of the image ... and page layout ... what did*
3		*you say about the page layout? What's important? We're talking about* pay layout…
4	Kelly	*Yes.*
5	Alice	*Um, it's good ... on the home page to have all the introduction, and on the side here,*
6		*there are all the links to the other pages ... so it's easy to follow.*
7	Kelly	*And when the internal links stay on the side*
8	Alice	*Yes, all the time*
9	Kelly	*Yes, all the time*
10	Teacher	*In a frame.*
11	Alice	*Yes*
12	Kelly	*Yes*
13		[…]
14	Teacher	*Okay…um…what about color?*

15	Alice	*Lots of colors*
16	Cathy	*Yes*
17	Teacher	*So you like colors*
18	Alice	*Yes*
19	Kelly	*Yes*

In the talk in example 12, Alice responds (example 12, lines 5-6) to the teacher's prompt (example 12, lines 1-3) and then Kelly adds to Alice's answer (example 12, line 7). In fact, Kelly's comment is almost a paraphrase of Alice's previous comment. Kelly and Alice agree throughout the interaction (e.g., example 12, lines 8-9, 11-12, 18-19). These contrast sharply with Cathy's minimal participation (example 12, line 16). Dismissal of Cathy's attempts to participate is well illustrated by example 13 which takes place while Alice, Kelly, and Cathy are discussing ways to present texts on their Web page.

Example 13 (Group A, week 6)

1	Kelly	*Home, homepage…*
2	Alice	*Together or…*?
3	Kelly	*Yes.*
4	Cathy	*Separate.*
5	Alice	*Together.*
6	Kelly	*Together.*
7	Cathy	*Just one page for everything*?
8	Kelly	*And what will we have … a home page … are we going to have the title … or…*?
9	Cathy	*Is the home page just with…*?
10	Alice	*A windmill.*
11	Kelly	*A windmill.*
12	Cathy	*Yes.*
13	Alice	*Yes, but I think we need to have a bit of text too.*
14	Cathy	*From the era.*
15	Alice	*Not from the era but of our site.*
16	Kelly	*Yes, yes. And, yes, something that explains the aim of the site.*
17	Alice	*like the history of windmills and…*
18	Kelly	*Windmills that…*
19	Alice	*In that era. It's an era of prosperity because the, … I don't know … you know, all the…*
20	Cathy	*Maybe…*
21	Alice	*Grain. And I don't know what else they produced.*

22 Kelly *The grain*!

23 Cathy *Maybe on the home page … the three paragraphs…*

The agreement between Kelly and Alice (example 13, lines 5-6, 10-11, and 21-22) stands in stark contrast to their rather negative reactions to Cathy's comments (e.g., lines 4-6, 14-16). Notice, also, how Cathy's question at line 7 (repeated at line 9) is ignored by the other two, who move on to discuss another topic. As Cathy becomes increasingly silent towards the end of the semester, there are few examples of any interaction between Cathy, and Alice and Kelly.

Group interaction in the PrOCALL classroom is driven by a broad and naturalistic goal, and students negotiate their participation in achieving it, rather than by micro-tasks, simulated interaction, and scheduled responsibilities. In such a setting, personality and social skills are important factors determining what learning opportunities will emerge for individual students. In this study, Cathy's increasing isolation clearly results in fewer opportunities for her for language learning through collaboration. Conversely, the transcripts of Alice and Kelly's collaborative discussions reveal a variety of opportunities for resolving linguistic problems, practicing newly acquired knowledge, and therefore, language learning.

Lack of Collaborative Dialogue

Group B consisted of Ruth and Elisa. In general, Elisa was eager to speak French, to discuss the group topic, and to be engaged in the webpage writing activities. Ruth, on the other hand, had a rather negative attitude and often digressed from the tasks. While physically they sat together and interacted verbally, examination of their actual collaboration reveals that their Web page writing processes were independent from each other, and that they spoke in English most of the time, thus not making use of potential language learning opportunities.

Example 14 illustrates Ruth's ability to initiate a digression. The utterance in line 2 is the beginning of a long digression in which the students constantly talk about "off-task" topics, and although they are sharing a computer and playing with it, what they are doing is not congruent with what they are talking about. Such digressions reduced the opportunities for linking language use to activity on the computer screen.

Example 14 (Group B, week 7)

1 Teacher *Now what would be good would be to put that in an html document and*

2 *experiment with different fonts and backgrounds.*

3 Ruth Yeah, do you want to do, green? I think green's a good idea…So how have you been?

4 Elisa I've been good.

5 Ruth How's the boy?

6 Elisa Which one? No, the one here?

7 Ruth Marcus?

8 Elisa Oh, Marcus. No … good name though.

9 Ruth: Hamish? Hamish?

10 Elisa Yeah

11	Ruth	I think I was in love with a guy called Hamish once…He doesn't happen to play violin
12		does he?
13	Elisa	No.

Of course, on rare occasions they do discuss the tasks, but note there is no attempt at any point to use French, and notice how rapidly the digression emerges in the following example (example 15, lines 7-10):

Example 15 (Group B, week 7)

1	Elisa:	This is html.
2	Ruth	Yeah. But how do we put it on the net?
3	Elisa	We haven't even done it yet.
3	Ruth	Yeah, but can't we put it on anyway, just for fun? Just to see what's happening? No?
4	Elisa	No … you have to write your thing first.
5	Ruth	Oh, shit … I'm going to show you my high school Web site. I'm going back tomorrow.
6		Um … we have this concert on once a year, in this chapel somewhere and we have it with
7		the players, and we have to come back and play. Look, a virtual site … [talks more about the school]
8		I'll show you my history teacher who I'm totally in love with … he's my
9		history teacher.
10	Elisa	This is html.

There is some evidence that Ruth is reluctant to speak French and is not confident about her abilities. Ruth receives feedback from the teacher that is not entirely positive. She has done a draft of her Web site, which is a chronological list of Brittany's historical events. The teacher's feedback (week 7) is as follows:

> There are some good elements here, Ruth, but the quotes and the timeline take up too much room. Develop the first paragraph and take a stance on the possible conflict between the two identities … or, talk about your culinary experiences in Brittany… P [pass]

In Example 16, Ruth refuses to show Elisa the draft, which is required for the Web site:

Example 16 (Group B, week 7)

1	Elisa	Okay, so let's see your text, mate.
2	Ruth	No, you are not seeing my text.
3	Elisa	But we have to put in onto the Web site.
4	Ruth	I'm not putting it on the Web site. I'm correcting it. [complaining about the way the teacher wrote down the feedback]…
5		I knew it was shit.

6		[…]
7	Elisa	So what do you want to change about your thing?
8	Ruth	Everything.
9	Elisa	I'll show you what I've got.
10	Ruth	You can look at yours but you can't look at mine.
11	Elisa	Okay, so let's see your text, mate.

Although Ruth refuses to share her draft with Elisa, she explains the content of her draft:

Example 17 (Group B, week 7)

1	Ruth	I knew it was rubbish.
2	Elisa	Because the first bit…
3	Ruth	Um, I was talking about how it was distinct geographically and culturally, and
4		Talking … and I sort of said, you know, some people think there's a bit of a conflict between
5		their identity and the French identity. That was sort of alright. But then I just sort of
6		wrote this boring history stuff because I couldn't really think of what to say. And then
7		some crap about some crepes. So, I'll redo it. Oh, well. I just like, have to take out the
8		boring stuff.
9	Elisa	What do you want to redo about?
10	Ruth	Oh well, it's not, you know, how ours is about … identity and I couldn't really ... I did it at
11		the last minute and I couldn't really think of anything like, how to talk about, like, food
12		and talk about identity without sort of sounding like idiot.
13	Elisa	Yeah, yeah, yeah, yeah.
14	Ruth	So I think I'm going to get some documents in English as well.

Ruth acknowledges that the content of her draft is not interesting (example 17, lines. 6-7), saying she did not know what to say about the group topic of identity in Brittany. She knows her draft needs revision, but notice the decision Ruth makes to resolve the problem. She says she is going to find documents written in English (example 17, line 14). This suggests that she is not well disposed toward learning French; in other words she is not oriented to the goal of language learning. This is further supported by the following extract in which Elisa offers to give Ruth some contact addresses of her French friends so that Ruth can obtain more information on the topic (example 17, line 1-2). Ruth appears reluctant to speak French (example 17, line 3), and although Elisa says that she may ask them in English (example 17, line 4), Ruth still refuses and chooses to work by herself by saying "I don't want to be asking stupid questions" (example 17, line 6-7).

Example 18 (Group B, week 7)

1	Elisa	But …[inaudible] do you want, do you want some email addresses of people, like you
2		could write to and ask them questions if you've got questions?
3	Ruth	In French?
4	Elisa	Or you could ask them in English … Cause I've got like … there's some amazing people that
5		I met over there who would be really happy to explain things to you and … you know.
6	Ruth	I should probably still do some more backgroundy stuff. Like, I don't want to be asking
7		stupid questions.
8	Elisa	Hey, I went over there not speaking French and I was asking questions the whole time.
9	Ruth	Did you learn French when you were over there?
10	Elisa	Yeah.
11	Ruth	I don't know how you could do that.

Part of the problem appears to be that Ruth does not particularly enjoy working in a group, and would rather work on her own:

Example 19 (interview, Ruth, November, 2002)

Int.	How do you feel about working with Elisa?
Ruth	I'd prefer work on my own. In university setting, it's harder than at high school because people come and go at different times and they are not always around. Last week was really tricky because Elisa didn't seem to work and it was ready to finish on Wednesday. Then Elisa wasn't there. It was really hard. So in that sense, […] I don't think it worked too well as it might have.

In a practical sense, Elisa and Ruth's official collaboration was realised only to the extent that their pages were linked to the same introductory page at the end. They really engaged in parallel activities which were independent of each other. This lack of collaboration stands in stark contrast to the collaborative atmosphere created by Alice and Kelly (although to the exclusion of Cathy) and suggests that group and pair work in language classes needs to be very carefully handled if it is intended to be used to enhance oral interaction in the target language in the classroom.

Oral Interaction With the Teacher

As she did not have many opportunities to speak French with Ruth, Elisa's oral interaction in French was between her and the teacher. These interactions are usually initiated by Elisa, and the topics that she initiates are often related to the tasks. In the following talk, notice Elisa's enthusiasm for speaking French with the teacher.

Example 20 (Group B, week 7)

1	Elisa	Do you know there's a new film by Cédric…
2	Teacher	[says something but inaudible]
3	Elisa	*L'auberge…*
4	Teacher	*I've seen it.*
5	Elisa	*You've seen it?*
6	Teacher	*Yes.*
7	Elisa	*All of my friends keep telling me "it's so good!"*
8	Teacher	*Yes, it's pretty good.*
9	Elisa	*With Audrey To … t … tou…*
10	Teacher	*Tautou*
11	Elisa	*Tauou*
12	Teacher	*And the … the boy who is in several of his films … I've forgotten his name.*
13	Elisa	*They've told me it's really great.*
14	Teacher	*But what's quite interesting in that film, in my opinion, is that* … [talking about the film]

When Elisa asks the teacher about a French film (example 20, line 1), the conversation begins. Elisa's enthusiasm about speaking French stood in contrast to the other students' because, in fact, no other student in the classroom would talk to the teacher for the purpose of just "chatting" as is seen in the previous examples. She also did not seem to be afraid of making mistakes or being short of vocabulary.

Example 21 (Group B, week 7)

(The class had been previously asked to find Web sites related to their group topics and submit a bibliography to the teacher. Elisa is talking to the teacher concerning her bibliography.)

1	Elisa	*Did you read any of the site that I put in on …?*
2	Teacher	*No*
3	Elisa	*It's really good. I put the page somewhere....*
4	Teacher	*In the bibliography.*
5	Elisa	*Yes, in the bibliography. He speaks a lot about what I'm doing, the importance of*
6		*maintaining Briton. But there's sense of, a sense of "humeur"* [wrong word meaning "mood"],
7		*is that what you say*?
8	Teacher	*Of humour* [providing the right word for humour].
9	Elisa	*A really good sense of humour. He's a bit satirical, a bit… He's a Briton, so he can do it...* [keeps talking about the Web site with the teacher]

In example 21, line 6, Elisa is aware that she may be using the wrong word *humeur* ("*But there's sense of, a sense of* '*humeur*'") and immediately asks, "*is that what you say*?" This is a spontaneous request for help with this lexical choice problem. While the function of the request is to find out the correct word, the utterance serves the additional function of ensuring continuation of communication at hand. Therefore, in responding to the teacher's feedback, she produces the right word, not in isolation (i.e., merely mimicking the teacher's feedback), but in the context of the communication (i.e., "*a really good sense of humour*"; example 21, line 9).

Elisa's dialogue with the teacher reveals an important characteristic that highlights her merit as a language learner. First, she is enthusiastic about using the target language (even though she is not certain she has the right word, she attempts to put the word into use), which allows her to learn from the teacher (example 21, line 8), and, second, she skillfully uses the teacher's assistance. That is, she applies the word given by the teacher immediately in her subsequent utterance (example 21, line 9). The following is a similar example:

Example 22 (Group B, week 7)

1	Elisa	*If, at home … how do I say "the people that I live with"? It's not "concomitant,"*
2		*no…"flatmate" or "housemate"?*
3	Teacher	*"housemate" [collocataire]*
4	Elisa	*Is that it? Um, my housemate has Adobe Photoshop, so if I can use that … can I save onto*
5		*disk with Adobe?*

Elisa wants to say that her housemate has a program that might be useful for her Web page writing. In an attempt to say it, she needs the French word for "housemate." She paraphrases the word as "*the people that I live with*." She not only succeeds in asking for the word in French by paraphrasing, but also suggests possible words: "'*concomitant,*' *no…*'*flatmate*' *or* '*housemate*'?" (example 22, lines 1-2). Again, she immediately puts the teacher's feedback into use (example 22, line 4). And again (as described for Kelly and Alice's interaction), Lantolf's (2003) concept of imitation is applicable to highlight another important characteristic of Elisa's language learning. Her imitation of the teacher's feedback is constructive in the sense that she does not merely replicate what the teacher says, but transforms it and uses it in context. Atkinson's (2002) account of language learning may be applied to a language learner like Elisa, who takes opportunities to use the target language for communicative ends:

> One acquires a language *in order to act, and by acting,*[emphasis added] in a world where language is performative. This is exactly why and how children learn their first language, and it accounts as well for most of the second/additional language learning going on in the world today. (p. 537)

We have seen that good collaborative relationships between students in the project-oriented environment can provide a range of opportunities for language learning. However, it cannot be taken for granted that these are going to be used to their full advantage. Thus, some students may need to work harder than others to ensure that they have adequate opportunity to use the language. Some students may be less motivated to learn than others, or may be influenced by other affective factors. Personal relationships, as well as ability and ability to interact with computers, may also limit or enhance their opportunities to learn. It is also important that language students are oriented toward learning the language, and that they take advantage of the opportunities for learning that come their way.

CONCLUSIONS

The present study has undertaken analysis of the oral interaction occurring between L2 learners working on Web-based projects in small groups. We adopted a sociocultural perspective which acknowledges that social spaces where collaborative dialogues (Swain, 2000) occur include physical objects such as computers and associated electronic spaces which interact with social behaviour and hence with learning itself (Leahy, 2004; Meskill, 2005; van Lier, 2002).

The research demonstrates that the relationships which developed between the students had a profound impact on generating learning opportunities for the students and each individual's use of L2 in oral interactions as has been found in earlier research on learner interactions in task-based pair work (Storch, 2002). Social exclusion in the PrOCALL classroom resulted in fewer "language-related episodes" (Swain & Lapkin, 1998) and fewer learning opportunities, while smooth collaboration generated learning opportunities through the resolution of linguistic problems and the provision of an arena for the practice of newly acquired knowledge. The analysis provided examples of naturalistic interaction at the computer where the learner does not merely repeat someone else's utterances, but reconstructs them and applies them in a different context, thus displaying intensionality and agency (Lantolf, 2003), the *sine-qua-non* of language use (Winograd & Flores, 1986). One direction of future research would be to explore what types of goal-oriented learning tasks performed using computers are most likely to contribute to the development of relationships between learners that are conducive to generating learning opportunities.

In the analyzed data, collaborative dialogues in the PrOCALL classroom were often linked to activity on the computer screen and could be perceived as "triadic interaction" (van Lier, 2002) or "triadic scaffolds" (Meskill, 2005). In example 10, the students decided to resolve the meaning of an item on the menu bar by clicking on the bar and checking its function. Computer activity thus provided a link between an unknown L2 language item and its function to illuminate meaning. The study has provided examples where "triadic scaffolds" not only involved the student, the teacher, and the screen, as in Meskill (2005), but also groups of students and the screen where one student assumed the role of a more capable peer.

The computer screen can be seen as a microcosm inviting interaction and extending the arena of the classroom, limited by the physical state of objects it contains. The changing relationships between various symbols systems on the screen provide ample opportunities for students to reflect, verbalize, and negotiate. The transcripts for example revealed instances where students' private speech, in the form of loud verbalizations, became part of collaborative dialogues and created learning opportunities. Interestingly, the computer screen had the ability to trigger private speech, which then became a shared effort between two students. In one instance, the computer screen set off a verbalization, which in turn prompted another student, who had assumed the role of a more capable peer, to suggest an alternative form of a word. Following this, the first student responded by overtly illustrating what she was trying to do and by performing an activity on the screen, an example of learning through "perception-in-action" (van Lier, 2002, p. 147).

Overall, technology turned out to be an important factor shaping the collaborative relationships observed in the classroom and, consequently the learning opportunities available to students. The study has revealed that technical problems often changed the established roles between learners. A student who acted as the novice in language-related collaborative dialogues, often became the leader in situations involving technological problems. This change was accompanied by switching to using English rather than the target language. It is not entirely clear whether switching to English was triggered by the technical problems (a new topic; see Leahy, 2004) or the role switching. Situations were also observed when technological and language problems were linked together and none of the students was an obvious expert or novice. In such situations, students attempted to utilize the computer both as a source and tool for language learning and they formed a balanced relationship as explorers of technology and language.

More research is required on how social spaces interact with electronic spaces on the computer screen in the project-oriented classroom. Pair and small-group work in such classes needs to be very carefully handled if it is intended to enhance goal-oriented interaction in the target language and language learning. Personality differences and problems with group dynamics must be addressed prior to project work through "learning how to learn" and "learning how to collaborate." We need to know more about the role of the teacher or more capable peer and the learning task in assisting learners with noticing and taking advantage of the rich learning opportunities emerging from "triadic interaction" (van Lier, 2002) with the computer screen.

NOTES

1. The question was "Have you ever done webpage writing before, particularly in French? If so, in what context?"

2. The question was "How would you rate your computer skills, especially those skills that are required to write webpage?"

3. Biddy's answer was "between good and fair."

4. In all transcripts, italics indicate that the original talk was in French and that this is a translation.

ABOUT THE AUTHORS

Gumock Jeon-Ellis has completed a PhD on the use of Web-based hypertext writing for second language learning at the University of Melbourne. Her interests include computer assisted language learning, second language acquisition, sociolinguistics, and Korean language teaching.

E-mail: gumijeon@hotmail.com

Robert Debski is Associate Professor and Director of the Horwood Language Centre, School of Languages, University of Melbourne. His research interests include technology in minority language maintenance and learning,

project-oriented CALL, and epistemology of CALL.

E-mail: rdebski@unimelb.edu.au

Gillian Wigglesworth is Associate Professor and Head of the School of Languages at the University of Melbourne. She has a wide range of research interests which broadly include both first and second language acquisition, language testing and assessment, and bilingualism and she has published widely in these areas.

E-mail: gillianw@unimelb.edu.au

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