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Off-screen talk and CALL: Role of the machine/participant

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Introduction

During the brief history of computer aided instruction, perceptions of how the computer can serve as an instructional device for learning have seen significant shifts. As theories of the nature of learning and instruction themselves are in flux, this is not surprising. A distinct parallel exists, for example, between current movement away from teacher-centeredness and the movement in computer aided instruction away from computer activities controlled by the software author. (Higgins, 1988; Meskill, 1991; Milheim, 1988; Stevens, 1984). As the learner becomes central to the instructional process, the machine (like the teacher) is becoming less frequently viewed as a purveyor of knowledge, the master of a body of information to be passively digested. It is, in short, becoming a tool to think with and act upon.

A compelling example of this shift in thinking and practice is the once prevalent "a chicken in every pot" (a computer for every student) desideratum which has taken a significant turn in the last decade. Apart from the most salient issue, cost, loss of steam for the one-student-one-computer movement has been due in part to research findings and, additionally, to reports from the classroom. Claims that superior learning and attitudinal outcomes are more likely when students work cooperatively at the computer are emerging across disciplines (Johnson et al, 1985; Male, 1986; Mevarech et al, 1987; Webb, 1984). Whereas the vision was once rows of individual students one-on-one with the machine, many classrooms and computer labs have of late become lively, interactive environments where cooperative exchanges between pair and group members is valued, encouraged and considered intrinsic to instructional as well as socialization goals.

Moreover, in the age of Communicative Language Teaching (CLT), where class member interaction is very often the primary goal of language learning activity design, the notion of students actively and cooperatively engaging in activities that are computer generated carries its own intuitive appeal. For language learning a potentially attractive role then, one that complements current communicative practices in second language instruction, is that of the computer as a stimulus for student-student communication practice. It would appear that talk around a computer activity or "off-screen" talk may represent a form of communicative practice for students of a foreign or second language. Research on language learner talk at the computer reported to date, however, paints a somewhat different picture.

The Conversation

Learner engagement in activities designed to require the exchange of meaningful ideas and information is at the heart of communicative language teaching. Orchestrating such interaction is currently facilitated through textbook mediated activities as well as by teacher innovation. In addition, communication-based tasks often employ as springboards any sort of medium (texts, pictures, audio,

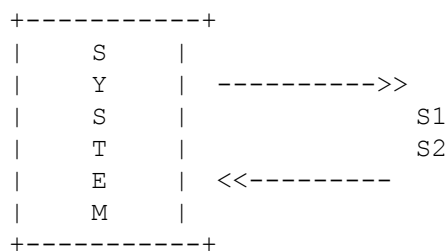
video). Used in this fashion, these media then become something around which talk occurs and serve as catalysts for the negotiation and exchange of meaning (Penfield, 1987).

In communicative pairwork activities designed to promote talk around, through and/or about a given non-computer medium, learners engage in conversation that can be characterized as stimulated by the visual and/or aural medium. Resulting discourse is the product of the communicative task assigned, what is seen and/or heard via the medium incorporated, personal knowledge of the world that students bring to the exchange as well as the nature of student personalities and student-student relationships. In this scenario, the integrity of a two-way exchange of meaning remains intact with the medium serving only as a springboard for human interaction.

But, what happens when the medium's role of catalyst shifts to one of a conversational partner? when the medium is no longer static or linear but dynamic and interactive? when the medium requires input which, in turn, produces correlated output? In short, what happens when a 'third party', a conversational machine/participant, enters into the activity?

When the medium employed is dynamic and interactive its role becomes one of a participant in what becomes, it will be argued, a unique exchange. Given more than one user, the exchange does not happen simply between two people, the interaction is with the machine with resulting human-human interaction mediated by its presence, its prompts and responses to input.

Figure 1 below represents the three-way 'conversation' configuration: a pair of learners and computer.



What is the nature of this machine-as-participant interaction? In what kinds of communicative practice do L2 learners engage in this configuration? The following section reviews recent studies of language learner discourse given this scenario.

Studies of CALL-Based Learner Discourse

Classification of the kinds of interaction, the specific kinds of language that various computer activities tend to trigger for second language students working together at the computer has been the focus of a handful of recent studies (Abraham and Liou, 1991; Chang & Smith, 1991; Jones, 1986; Levy & Hinckfuss, 1990; Piper, 1986; Windeatt, 1986; Young, 1988). Although the intuitive appeal for having the computer serve as a motivating conversational catalyst for language students is

strong, research that has examined cooperative computer use for ESL and foreign language students has produced mixed results. It is not clear that interaction between students, that is the kind of interaction considered valuable to language acquisition, can be readily attributable to cooperative work with CALL.

For example, where Windeatt (1986) had anticipated that ESL students would discuss with each other various response options presented by CALL software, little if any verbalization occurred. He observed students working as individuals together; i.e., handing the keyboard to a partner who suggested a response rather than engaging in a discussion of each response's merit. Students were observed to work through CALL activities as single users, not as interacting units. Verbalization that did occur was limited to suggesting and/or rejecting possible answers to computer questions or puzzles. This speech was typically restricted to reduced or single-word utterances.

Language teachers' goals are often to design and orchestrate tasks that promote the kinds of interaction they deem valuable. With computer activities, however, students are likely to produce language they deem appropriate to the immediate social situation found Jones (1986). In the case of ESL students working in pairs on a simulation, the Yellow River Kingdom, she discovered that this was playing a game with friends. Students therefore used language among each other that reflected their relationships and the act of enjoying a game, not language inherent in the taking on of roles in a simulation. Students did not automatically take on the roles of government officials making key decisions about their country and consequently did not produce language that would be related to those roles as had been anticipated. Talk generated was limited to making and accepting or rejecting possible responses to the computer in, again, a structurally and lexically limited fashion; there were no elaborated exchanges between learners taking on the roles of characters as in off-line classroom simulations.

In a related study, Piper (1986), ESL students were found to generate language around three different types of CALL that was "impoverished" (p. 196). Utterances were again limited to structurally and lexically simplified speech which reflected little concern for the interpersonal exchange and negotiation of meaning. Abraham and Liou (1991) found even fewer actual utterances than did Piper on the part of ESL students paired with three genres of CALL. In analyzing the discourse generated, however, the authors did find a greater variety of language functions used when students spoke.

Legenhausen and Wolff (1990) in analyzing videotapes of foreign language students working collaboratively through an on-line simulation found that their subjects' discourse also contained a wide variety of language functions. They also found, however, that students rarely engaged in negotiation, the elaboration of proposals or in substantiating their briefly expressed opinions. Moreover, when conversational moves were made on the part of one student (initiations, suggestions, questions), these were more frequently overlooked by their partner than responded to. Verbalization was again limited to single-word utterances with longer utterances comprising a "limited set of stereotypical sentence patterns" (p. 11).

Chang & Smith (1991), in their analysis of native English-speaking Air Force cadets paired to work on materials for beginning Spanish, found student talk primarily concerned with decoding syntax and lexis. The most common interactions involved

translating, paraphrasing and commenting on the lesson content in English, not Spanish. Participants were observed to be "reluctant to extrapolate, state personal opinions, or draw conclusions from their understanding of the lessons and/or from their personal experience when negotiating with their partner possible answers to inferential questions" (p. 209).

Conclusions drawn from analyses of target language output in these studies are characterized by general disappointment. It is intuitively appealing in the era of communicative language teaching to envision the computer's role as one of a springboard to lively interaction with a wide range of meaningful utterances ensuing. What these few research projects reveal, however, is that language employed by learners in the target language is typically limited. In these studies, learners appear to speak to one another only when it was necessary to the accomplishment of a given task and then only in very restricted ways both in terms of linguistic sophistication and in terms of level of interpersonal interaction. Author interpretations for these findings focus on several aspects of the interaction. These are charted below in Figure 2.

	software design	social situation	task assignment	no curricular fit	computer is barrier	learner characteristics
Levy & Hinckfuss (1990)	X					
Piper (1986)	X			X	X	
Jones (1986)	X	X	X			

Ledenhausen & Wolff (1990)	X		X
Abrams & Liou (1991)	X		
Windeatt (1986)	X	X	
Chang & Smith (1991)			X

Figure 2: Author interpretations of off-screen talk study results.

The studies included in Figure 2 utilized a range of CALL genres: cloze, multiple choice, games, and simulations. It is interesting to note that regardless of the variety of software programs analyzed, the most predominant accounting for the limited amount and kind of speaking observed in these studies is limitations on the part of the software employed; that is, each type of these CALL stimuli was found not particularly conducive to meaningful and sustained verbal interaction. The issues of curricular fit and pre-teaching/task design were also presented as explanatory: Piper and Windeatt hypothesize that more integration of the CALL activities with the regular course syllabus would perhaps have resulted in more enhanced communication between students. Chang and Smith pointed to learner characteristics as partially responsible for minimal collaboration. Their subjects consisted of military cadets for whom competitive, not collaborative tasks, were the norm.

Finally, Legenhausen and Wolff propose that the computer itself appears to be 'interfering' with potential interpersonal exchanges; that is, it is a third party (the machine) upon which students tend to focus more than on exchanging meaningful information with one another. Students are, the authors contend, "prevented from creating a new social reality themselves, which seems to be a prerequisite for a successful simulation." (p. 12, my emphasis). Piper echoes this in observing that her students' "attention focused elsewhere" than on communicating with their partners. (p. 197)

Outcomes of these reports seem to suggest that the kinds of language generated by language learners working cooperatively at the computer may not be entirely in sync with the goals of communicative language learning. That is, the exchange and negotiation of personal meaning is not taking place at a desirable level of liveliness nor complexity. In speculating on possible reasons for the weak character of student interaction, additional aspects of the three-way conversation need to be addressed.

Mindset

First, the design of software tools and "interactive" computer software has historically been grounded on the assumption that the resulting dialog between human and machine is based on a single user. That is, program authors envision a single person reflecting and negotiating through programmed tasks and materials. The single-user configuration has, then, been a controlling premise in designing the bulk of interactive computer-based materials. In fact, one need only recall software product advertising that touted "Individualized!" instruction. In the single-user scenario, choices for the user are presented, the user makes what is usually a thoughtful choice, the system responds.

Because options available to the user and the computer's output in response to the selection of those options have been predetermined by an author or designer of the program, there is then inherent in the interaction the tendency on the part of the software user to 'psyche out' the invisible program mastermind; the mind that organized the computer tool, task and/or information. A one-on-one 'quest' strategy of sorts results. It follows, therefore, that a single-user design would most likely prompt students to work as individuals against the machine even when ostensibly working "together".

Also to consider is the fact that students are now coming to language instruction with some experience as computer users. Their established mindset, and one that the design of software certainly promotes, is that of tasking with the machine as a single, independent user. We might therefore anticipate preoccupation on the part of computing students with accomplishing a task on their own; working individually and reflectively at making the machine do what they want it to do: to divide and conquer. It is with such a mindset that language students may come when asked to work with a partner on CALL materials. Young (1988) contends that "...nature of the interaction among learners around a computer appears to be more focused than interactions without the computer." (p. 70) Students are focused, yes, but not on each other and the negotiation and exchange of meaningful discourse. They are focused rather on the task, the machine, with their eyes glued to screen.

In addition to the fundamental nature of system design and machine usage that, as established forces, are possibly working against the kind of off-line, CLT-like collaboration deemed desirable, there is the importance of learner background and expectations. When assessing the potential value of communicative practice at the computer through collaborative tasks, the issue of learner expectations concerning the learning process needs to be taken into account. Computers alone are not magic instruments that alone can prompt the kind of rich interaction we may desire. Lessons learned from orchestrating successful CLT classroom activities demonstrate the vital importance of human (teacher) orchestration and facilitation. Students require guidance and encouragement when working collaboratively on communicative tasks not to mention the importance of the teacher's role in the preteaching of language functions, gambits, structures and lexis that they may incorporate in their interactions. Without this kind of teacher facilitation, students may be more inclined, in fact, to focus their attention more on tasking with the machine than on effective communication with a partner.

Moreover, teachers typically find that students bring to instruction their own culturally and academically predetermined concepts of how teaching and learning should take place. Competitive, independent learning is still the norm world wide.

It could be argued that there is in working with a computer on interactive programs an inherent element of competition, competition with the machine. In order to mold the dynamic of a communicative classroom, ESL teachers typically find that differing learner expectations regarding competition versus cooperation must be acknowledged and, in turn, collaborative, communication-based tasks need to be introduced by gradual and often subtle means. If learners are unaccustomed to cooperative tasking, if they have not experienced and recognized the value of this kind of meaningful oral/aural practice, then placing pairs of students in front of the computer and expecting them to engage in linguistically rich conversation may just be expecting too much.

However, if students are accustomed to and comfortable with collaborative learning off line, it is important to consider that the computer may act as a barrier or "interfering other" rather than as a springboard to communication. As previously mentioned, inherent in computer work is a mindset: one is focused on the accomplishment of a task, of being master over the machine, not on communicating with another human being. There is a preoccupation, for example, with navigation, with assessing what the right thing to do may be and testing it out. The fact that observations of pair work reveal two people working independently 'together', communicating only at the simple level of getting the machine to respond, then, makes sense.

Where's the script?

There is an inherent conception of volition on the part of the machine transmitted in part as volition/intention on the part of human designers. This perception often becomes an issue of psyching out, "out thinking" an invisible author's logic. Information, after all, has been schematized by another, non-present human being. We users attempt to figure out this schema and, subsequently, methods of organization that we can in turn use to meet our needs and achieve our goals. We work at making the author's method accommodate our mission. For these processes, we lack established scripts to engage in with others on what is, it has previously been argued, an individual, reflective undertaking.

It is perhaps the case that in these studies, as well as in a broader context, students and teachers had no established scripts for two people engaging in this kind of activity together. In fact, except on a limited basis, such scripts are perhaps not yet established (1). Therefore, that the script students appear to use when they do interact with each other is limited to getting the machine to respond also makes sense. The design of an off-line communicative task begins after all with an analysis of the kind of verbal output, the interpersonal communication we would like to see of our students. Tasks and activities are then designed to promote use of this language (Meskill, forthcoming). When the computer is involved, this process is not so straightforward as we appear to lack both a developed discourse for this form of interaction and a useful level of understanding of what that discourse might be.

Conclusion

Computers have clearly sparked a great deal of interest on the part of educators who may view the technology as providing a means of motivating students to work on language skills in a focused and meaningful way. In terms of enhancing interaction, there is little doubt that the number of "turns" or possibilities to interact

with material is greatly augmented for students who work independently on line as opposed to classroom interaction where the individual student's opportunities to interact with the instructor and/or fellow students is limited by number constraints. Likewise, communicative approaches to language instruction have long advocated the 'interactional' advantages of small group and pair work as a means of promoting productive communication skills in the target language. It would follow that pairing students at the computer, especially students who do not share the same native language and must use the target language to communicate, would enhance further opportunities for effective practice and motivate extended participation. In fact, the authors in each of the off-screen talk studies cited here, consistently address the issue of enhanced student motivation when the computer was involved in pair work. Windeatt (1986) even observed that students worked twice as long at the computer as students engaged in a like activity off-line. Moreover, Jones (1986), for example, comments on the wonder of watching language students repeat what was essentially the same computer task five times without hesitation. Additionally, the use of computer tools (word processing and spread sheets) and the kinds of off-screen talk such usage generates was not addressed here. (see Stevens, 1989 for discussion of computer tools and language learning). Reports that participants appeared engaged and excited adds grist to the commonly held assumption that the value of computer-stimulated instruction lies in its ability to motivate.

In order to best exploit the potential of the computer to motivate and promote student-student exchange, however, a number of issues clearly need to be considered. There is the question of how on-line pair tasks can most effectively be set up so that maximum student-student interaction ensues. Not unrelated too is the question of whether the kinds of exchanges that would contribute to an enhanced target language repertoire can be pre-taught or modeled prior to hands-on computer work. These considerations are, of course, inextricably tied also to the type of software to be employed and how it can best be used to achieve objectives related to the goal of communicative competence. Chief among these issues, though, seems to be the development of a better understanding of the three-way nature of this exchange, corresponding scripts around which communicative activities can be built, and specific software design criteria that will make the computer more of a participant and less of the barrier it appears to be.

The results of observations cited here were based on CALL that was not intentionally designed to spark student-student interaction. Software that was used was, rather, based on the single-user configuration and resulting student-student interaction seems to reflect this. However, from the days of instructional software labels reading "self-paced!" and "individualized", we may be heading towards an era in which "collaborative!" and "fuels student interaction!" may come of age and, as a result, see communicative richness between students establish CALL as a true catalyst for learner interaction.

(1) Professional environments specializing in computer work have certainly evolved their own unique forms of off-screen talk and more fully developed social discourse around computer tasks. In instructional settings, student-student interaction

patterns would also predictably emerge over time and extended usage; as norms of the social situation become more fully developed, students will most likely engage in interactions that have become habitual, or 'scripted'.

This raises the question, however, of the fate of emerging pattern for language learner interaction. If this consists of responding to one another and the computer in one or two word utterances with eyes glued on the screen, there is, perhaps some urgency in assessing the potential exploitation of this medium for enhanced communication even more vigorously!

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