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ESL and Multimedia: A Study of the Dynamics of Paired Student Discourse

Conversation and Computer Assisted Language Learning (CALL)

Recent trends in language teaching emphasize the role of active communication and consider student-student interaction an essential contributing factor in the learning of another language. Active engagement in the negotiation of meaning in the target language is believed to be key to the successful acquisition of that language. (Hatch, 1978; Stevik, 1976) Consequently, communication-centered or "communicative" tasks that involve learner interaction and the active negotiation of meaning are widely accepted as having significant pedagogical value. Such tasks are considered pedagogically and psycholinguistically beneficial to the attainment of communicative competence (Long & Porter, 1985) and, as such, the backbone of current Communicative Language Teaching (CLT) practices (Esling, 1991; Richard-Amato, 1988; Savignon, 1991).

It is from a similar theoretical and practical stance that assigning the computer the role of catalyst for activities which promote meaningful exchanges between students who work cooperatively with the machine, has been frequently promoted (Hammadou, 1992; Johnson, 1985; Pennington, 1989; Perez, 1984; Stevens, 1989). As language educators we become frustrated by technical limitations of student 'conversations' with the computer. With our sights set on rich input and communicative practice, ideally the computer ought to have the capacity to engage students in meaningful exchanges whereby the machine processes and responds to student input as a human interlocutor, preferably one well trained in conversational modification for non-native speakers (NNS), would process input and respond. Because the machine is currently limited in this respect, the notion of introducing a third party, through pairing language learners, into the computer-user conversation becomes a potentially attractive approach. From outside of the language teaching field, moreover, results of a number of recent studies are pointing to the instructional as well as social value of computer-based cooperative learning where student-student interaction becomes a highly valued component of the learning process (Johnson et al, 1985; Watson, 1991; Webb, 1984).

The possibilities for this three-way conversation are intriguing: given this configuration, language students may engage in communicative practice via what has been termed "off screen talk" (Piper, 1986) with one another. Empirical findings, however, indicate that pairing students at the computer and anticipating that they will engage in

meaningful conversation with one another in the target language offers no guarantees. Utterances made by language students to one another while working with CALL software have been examined quantitatively (Abraham & Liou, 1991; Legenhausen & Wolff, 1991; Levy & Hinckfuss, 1990; Piper, 1987), qualitatively (Chang & Smith, 1991; Jones, 1986), and anecdotally (Coffey, 1988; Taylor, 1986; Perez, 1984). Although anecdotal accounts portray work around computer-based tasks as lively and interactive, conclusions reached from systematic inquiries are less positive. That is, in comparison to the amount and quality of discourse generated in off-line tasks, what students say to each other when the computer enters into the conversation is limited in terms of complexity and communicative value. According to these accounts, students are conversing at a level of involvement and complexity that would indicate that this configuration, in and of itself, is perhaps not thoroughly conducive to the interpersonal negotiation of meaning we desire on the part of our students (see Meskill, 1992 for full discussion). The jury appears to be out, therefore, in regards to whether and how the medium can act as a springboard for communicative practice for paired language learners.

Problem #1: Metaphors

It is inarguable that the metaphors we live by are both compelling and pervasive. There are metaphors inherent in the language we use on a daily basis that are so much a part of our linguistic repertoire that their analogous quality tends to fade from our collective consciousness (Lakoff and Johnson, 1980). The 'computer as human' metaphor is a powerful example of this linguistic and perceptual inclusionary process. One need only scan the titles of both popular and technical books on computing to recall the ubiquitousness of the analogy: Friendly Software, The Second Self, How to Live with Your Computer, The Thinking Machine, Soul of the New Machine, etc.

When discussing computers and learning, the metaphor extends to the comparison of students learning via computer to *dialoging* with another human being: a "tutor" (Hope, Taylor and Pusack, 1984), "expert" (Snyder & Palmer, 1986) "guide" (Wilson and Tally, 1991), "savant" (Turkel, 1984), "master" or "pedagog" (Higgins, 1988). When conceptualizing computer-based learning, then, the machine's role takes on a human/participant quality that in turn determines a particular interactional dynamic.

The parameters of this machine-as-human metaphor are not limited to the simple attribution of human-like qualities to a fundamentally inanimate machine, however. On the contrary, the metaphor pervades not only our thinking and talking about computers and computers in instruction, but in the design of software itself. That is, software is essentially created as dialog between the user and the machine. It is conceptualized and orchestrated as such by the software author who employs the schema of one person dialoging with the system and designs 'conversation' accordingly.

When building expectations around discourse generated between two language students working together on a single system, both the interactional dynamic of a single user with the machine and single-user software design become problematic. Not only is pairing two students with software designed for a single user troublesome, but as language students, like all students in the 90's, become more frequent users of computers, that is, accustomed to using computers alone to perform a range of independently accomplished tasks, they are coming to the machine with a computer-user mindset. They are *used* to negotiating with a computer *on their own*; they are *accustomed* to interacting with the computer in a manner that precludes interaction with other people.

A parallel consequence given multimedia applications is viewer mindset. As is the case with the computer-user mindset, assimilation bias predicts that users would bring to video sequences experiences they relate most closely to the situation. For most people, experience with watching film or video is most likely that of relaxing and passively viewing. By virtue of such ingrained media-oriented behaviors, then, the presence of video may to some extent tranquilize students into habitual passive viewing modes. This may occur despite the fact that such sequences are, in a multimedia environment, ostensibly 'interactive'.

Like working with computers, listening to audio and viewing video precludes sustained interaction with others. Audio and video may, moreover, cause the machine to have an even stronger pull for student attention than it already has as a machine designed for single user dialog. These characteristics of the technology may, then, potentially distract rather than encourage verbal exchanges and, consequently, represent a "side involvement" (Goffman, 1981) that pulls focus away from sustained learner-learner interaction.

Problem #2: The Conversational Framework

Within frameworks for conversational interaction, interlocutors establish their respective roles, their relationships in regards to one another. Given work with computers is a typically solitary endeavor, the establishment of workable roles around a machine with which each participant has previously established an idiosyncratic rapport makes setting the tone for conversation to take place potentially problematic. Tied to roles established by interlocutors are the corresponding rules of conversation. An unspoken, unofficial yet binding contract is entered into that delineates these rules and the boundaries of appropriateness and felicity (Goffman, 1967). Because experiences likely to be referenced in approaching a computer-based cooperative session are those of the individual having worked alone on line, students bring to the configuration a focus on autonomous dialoging with the machine both in its role as tutor and tool. Consequently it might be predicted that the participant is likely to have neither reference for establishing and maintaining two interactional streams, one with the machine *and* one with a partner nor the linguistic wherewithall to compensate for the cognitive and

social demands such a configuration imposes, especially for the NNS.

The physical characteristics of the configuration, moreover, limit the possibility of employing non-verbal signals to compensate for, what is for the NNS, a linguistically demanding situation. Seated in front of the computer with a partner, one's face is turned not to the interlocutor, but to the computer screen. Eye contact and other key nonverbal signaling that are key to compensation and repair are thus impeded. There is additional pressure, therefore, on one's verbal store of conversational tools in order to compensate and keep a conversation going. It may be that for the NNS, the shelves of this store are poorly stocked.

The NNS, then, is in effect faced with an enormous juggling act for which she may not possess the linguistic skills and strategies to keep even one ball in the air. Paired at a computer, the student must simultaneously compensate for the fact that the framework, the configuration, has as its central focus a machine for which she has developed a single-user mindset; the physical limitations that impede the use of non-verbal compensation strategies; video which she is most likely versed in watching passively; a conversational frame for her to negotiate with someone who doesn't necessarily share her normative sociocultural baseline; and a situation which calls for conversational rules and strategies for which she has little or no experience linking to this already complex and demanding scenario.

By pairing language students we may be in effect anticipating that students will do something that is far from easy: maintain two different streams of conversation simultaneously, one with the machine with which she has had prior experience interacting with one-on-one, and the other with another human. This is a demanding proposition, especially when both exchanges are being carried out in the foreign or second language. Figure 1 (below) represents the dual conversation streams the configuration requires.



single-user conversation dual-user conversations

Figure 1. Conversation modes.

The constraints under which NNS students paired for cooperative computer tasking can be summarized as follows:

- 1) Cognitive Interference: Students come to the machine with a single-user mindset, to video with a viewer mindset;
- 2) Social Interference: NNSs are likely to be unaccustomed to establishing and maintaining social roles through conversations while task-intent/product oriented; the physical set-up, moreover, prevents use of non-verbal compensatory strategies;
- 3) Linguistic Limitations: NNSs lack the tools to engage in the negotiation of meaning under these conditions, the tools required to establish and maintain this genre of conversation.

Is it possible, then, that the computer, especially a multimedia system, may do more to block language student interaction than to stimulate it? Based on the constraints outlined above, it appears that paired computer work is a cognitively, socially and linguistically demanding enterprise for NNS. Given these hypothetical constraints, the following study was undertaken to determine their effects on student-student interaction.

The Study

The current study has as its focus an analysis of the three-way dynamic which results from pairing language students with a computer-based multimedia system. It was guided by the need to assess what are assumed to be the aforementioned peculiarities of dual conversation maintenance. The methodological and corresponding analytic framework is built around the anticipated constraints inherent in the three-way configuration outlined. The extent to which these potentially confounding elements affect students' discourse with one another was consequently the focus of data collection and analysis.

Six pairs of low intermediate students of English as a second language (average score on Michigan Test of Aural Comprehension= 72) were recruited to engage in what was set up to be cooperative learning with commercial multimedia materials for ESL. The twelve participants were from eight different countries. All subjects reported having at least one year of experience using personal computers; all reported being familiar with a mouse and pull-down menus. The subjects were recruited from two ESL classrooms where pairwork made up a significant portion of their language instruction. All had had experience working with their partner for this project at least one time prior to their participation in the study.

The choice of stimulus was based on the research findings of Abraham and Liou (1991), Young (1988). Both of these studies conclude that the more open-ended and less computer-driven the courseware, the

more likely rich communication between pairs of users will ensue. Findings of both of these studies parallel those of Pica and Doughty (1985, 1988) in assessing off-line tasks. Their classroom research also points to open-endedness as a criterion for prompting rich exchanges between language students. As this pilot study had as its goal to set up the dynamic so maximal interaction resulted, it was critical in the choice of stimulus that the criterion of open-endedness drive selection of materials. The software application that met both the criteria of open-endedness and simplicity of use became a relatively small portion of a commercially available multimedia system for English as a second language. The portion chosen has as its focus a series of cartoon storyboards that strung together tell a story, a story very much open to interpretation. In this CD-ROM driven activity, students are provided a series of options for working with digitized pictures and their accompanying audio sequences. They initially choose one of sixty-seven topics to work with. They may browse, do an aural/visual ordering puzzle and use an on-board notebook to write words, sentences or stories based on the images for each topic.

Subjects were told they could spend as little or as much time as they wished on the system. As an overall task they were told they could write a story using the on-line notebook. Participants were interviewed following each session to gauge affective reactions to the materials and to working with a partner.

Sessions were videotaped and transcribed. Coding and analysis focus first on capturing NNS attempts at 'dual' conversational management with respect to the configuration, on searching out patterns of interaction with the partner and with the system. Second, NNS discourse is compared to that of a pair of native speakers (NS) assigned the same task. Trends in the NS conversation are then contrasted with those of the NNS pairs.

Configuration Effects

Transcriptions of the NNS videotaped sessions were first coded to determine how utterances are targeted: characterization of the role of the machine/participant being the primary focus. To this end, subjects' speech is coded by the type and target of each of their utterances. Conversational moves, those intended to maintain interpersonal contact with the human partner, are coded as {conv}. Computer-oriented acts, speech directed at and/or in response to the actions/reactions of the machine, are coded as {comp}. When an utterance is neither directed at the human partner nor the computer but to no one in particular, these are coded as reflective {refl}. Additionally, each utterance is coded to indicate whether the utterance is transactional (/trans) or interactional (/int); that is, whether the utterance serves an impersonal, task-based function or whether it contributes to the maintenance or continuation of interpersonal conversation (DiPietro, 1983; McCarthy, 1991).

The following is one example of a recurring pattern of interaction

with the NNS subjects paired at the multimedia application. At the start of the section reproduced here, the participants are in the process of matching audio sequences with digitized images. Up to this point in the session, 2.17 minutes, there has been mostly silence. Speaker A is controlling the mouse.

insert Figure 2 here

The sample begins with subject A responding to positive feedback (music) from the system in response to a selection she made independently; that is, clicking on the correct image that corresponded to an audio sequence played previously. The act, "Oh." is coded as computer-oriented (in response to a computer response) and, because hers is a response to the system's response, is also coded as interactional. Speaker B is during this time silent, her full attention directed to the screen. Line 2 describes speaker A's physical actions: she positions the mouse on a new image and maintains interaction with the system. In line 3 she then asks speaker B her opinion regarding what she has tentatively selected. Speaker B, who too is processing both the machine's and her partner's question says neither directly to the machine which awaits a response, nor to her partner who is waiting for the same, but to no one in particular, "Hmm." She says nothing more, her eyes remain on the screen. This pattern of speaker A casting and speaker B not biting is repeated once more. Roles then reverse in line 8. Speaker B's response "OK" is a conversational move precipitated by either A's computer transactional move (selecting pictures independent of B) or their laughter in response to the new picture on the screen, or both of these events. When speaker A positions herself in front of the keyboard in preparation for typing she says to no one in particular "You create a story." B echoes with "WE create a story." This cooperative stance is affirmed by both participants in lines 14 and 15. Both then shift their attention back to the machine and task. The shift is apparent in the subsequent utterances which are transactional and reflective rather than conversational and interactive.

This excerpt illustrates a common pattern in how the NNS interactants as a whole dealt with the split focus of two conversational streams: we can see that the target of their utterances continually shifts. In shifting from machine to partner and back, subjects' focus does not converge into sustained cooperative contact between the human interlocutors. Such is the case throughout the NNS pair trials; there is a consistent pattern of shifting attention from one interlocutor (the machine) to the other (the partner) with utterances frequently directed at neither {refl}. There is also a tendency in these trials for either one or both pair member to commit focus to the machine even when one party makes attempts to elicit input and negotiate decisions, in effect to converse.

This shifting pattern prevails in all six NNS paired trials. The resulting telegraphic quality of the discourse mirrors results of other studies of off-screen talk with language learners (Abraham & Liou, 1991; Jones, 1987; Legenhausen and Wolff, 1989; Levy & Hinckfuss, 1991; Piper, 1987). Language students in this configuration seem to consistently resort to minimal, tentative utterances when faced with the dual focus and related demands this configuration imposes. The physical configuration and framework of activity, which includes the machine as a presence if not a participant, appears then to affect some difficulty, some breakdown in conversation.

Effects of Conversational Framework

As evidenced in this initial analysis, and supported by prior investigations, NNSs appear to have some difficulty maintaining open channels of communication with their partner and with the machine. This in no way places sustained communication between paired students outside the realm of possibility. On the contrary, several studies portray the computer as an excellent springboard to promote student-student interaction when the learners are native speakers of the language in use (Johnson, et al, 1985; Johnson, 1985; Young, 1988; Webb, 1984). What, then, specifically is impeding the non-native speaker from engaging verbally with her partner? What are the *tools* or discourse *strategies* that can be employed in the three-way configuration to overcome, what appears to be for NNS, a dual-channel impediment and, consequently, that serve to keep the human-human exchange going?

To establish a referential baseline of language requirements for pairwork with multimedia, and in turn attempt to treat these questions, a pair of NS was run as subjects. The NS subjects are native English-speaking graduate students who participated in the study under conditions identical to those of the NNS trials.

The Native Speaker Discourse

In keeping with results of previous cooperative pairwork studies with native speakers, for this pair of NS the configuration appeared to in no way impede a rich two-way dialog around the task it presented. The two NSs produced a steady stream of lively and varied discourse, their dialog reflecting two people who effectively negotiated a common playing field and its accompanying sociolinguistic rules. Both complied with the unspoken groundrules, worked through the task with these as mediators and, consequently engaged in complex negotiations of task and meaning.

In contrast to the NNS trials, two features of the NS discourse stand out. First, apart from two instances where one of the participants poses the questions "How do I get back/out of here?" (what do I click on to return to the previous/another screen) to no one in particular, the NSs speak to each other. There is not the shifting of target between the human interlocutor, the machine and no one in particular so prevalent in the NNS trials. There is, moreover, a steady stream of verbal interaction between the participants (139 words per minute) in contrast to the NNSs' telegraphic attempts at cooperative dialog

(57 average wpm).

The second (and not unrelated) characteristic is the high frequency of what I will call "involvement markers" in the NS discourse. In addition to more varied and complex syntax and lexis, the NS discourse is distinguished by the frequent use of the verbal signals. Interlocutors use these to maintain the flow of discourse between them while working with the material presented by the machine. By contrast, NNS use of these markers as a means of maintaining contact/conversation with their partners is infrequent. The interrelationship between the use of these markers, how well the human-human interaction is maintained and the amount and quality of discourse produced consequently becomes a question for investigation.

Involvement Markers

As defined here involvement markers are those linguistic tools that serve to 1) establish and maintain solidarity 2) keep the channels of communication open and 3) maintain conversational flow. They are those ubiquitous single words or multiple-word expressions that are critical to success in maintaining formal and informal conversation. They are characterizable as a composite or hybrid of a number of conversational phenomena variously termed "backchanneling" (Duncan, 1972), "phatic tokens" (Laver, 1975; Malinowski, 1923), "alternate regulators" (Poyatos, 1975), "chat" (Murray, 1991), "fixed expressions" (Sorhus, 1977), "involvement features" (Tannen, 1989), "gambits" (Keller, 1981), "cross checks", "contact signals" (Goffman, 1981), "conversational continuants" (Varonis & Gass, 1985), and "turn-taking mechanisms" (Sacks, et al, 1978). As defined here, involvement markers are strictly *verbal* tools that function independent of non-verbal communication signals. (See Appendix for examples of involvement markers by category).

The frequency and successful use of such involvement markers, it can be argued, are indicative of a particular level of conversational competence in situations in which interlocutor involvement plays a role; in cooperative tasks, for example. The critical role of these markers becomes clear in a situation where interlocutors are to negotiate roles and relational groundrules and maintain involvement. In a situation where non-verbal signalling is made awkward and attention is continually drawn to a computer screen, dependence on linguistic signalling as a strategy to achieve these ends is one likely result. In the case of two individuals engaging in cooperative tasking at a computer, use of these markers to sustain interactional ties appears to be the glue of the NS discourse.

To see how involvement markers are employed by NS as compared to NNS, tallies of markers used by all participants were taken. Figure 3 (below) is a breakdown of involvement markers by category with their frequency as they occur in NS dialogs contrasted with use by the NNS.

	NS t=26	NNS1 t=34	NNS2 t=48	NNS3 t=18	NNS4 t=37	NNS5 t=21	NNS6 t=42
statement as question:	25	2	28	4	9	0	16
word as question:	0	5	2	8	1	0	4
tag question:	1	0	0	0	2	0	0
confirm tag:	45	0	13	5	16	6	8
suggest cue:	26	0	2	0	14	4	6
directing signal:	56	7	4	4	41	12	23
phatic cues:	131	23	74	17	76	14	44
prefacing:	25	0	10	6	18	8	21
eliciting (answered):	14	0	3	8	4	6	10
eliciting (unanswered):	0	3	30	11	32	15	18
overlaps (phatic)	10	2	4	1	5	8	3
overlaps (nonphatic)	0	6	10	7	18	16	15
echo:	0	6	25	15	7	4	6
AVERAGE PER MINUTE:	13	3	4	5	7	4	5

t=time

Figure 3. Frequency of involvement markers

By examining the total number of involvement markers used by the NS as compared to the NNS, we can detect a significant difference in the manner that conversational interactions were maintained in this configuration. Verbal strategies that one uses in maintaining conversation, in maintaining involvement with a conversation partner, are less frequently employed by the NNS. This is in keeping with the findings of similar off-screen talk studies with NNS. Legenhausen and Wolff (1990), for example, determined from extensive analysis of language learner discourse with CALL that "...interactional moves such as PRE- and POST-EXCHANGES, SUPPORTING MOVES or GAMBITS are completely missing" (p. 11). The absence of such markers was notably pervasive in their study. Abraham and Liou (1991) similarly note that conversational management was the least frequent category of NNS interaction.

The NSs clearly have a number of tools at their disposal. They moreover have the knowledge of and experience with using these appropriately to maintain verbal interaction. In the case of working together at the computer, the NS maintained conversational involvement despite the potentially confounding elements of the machine/participant, user/viewer mindset and the fact that non-verbal cuing was potentially difficult due to the physical configuration. We can surmise that the NNS, on the other hand, either did not have such tools or facility in using such tools to maintain a like stream of interaction with their partners while working with the machine. This is evidenced by their low frequency of involvement marker use.

Unanswered elicits

One outstanding characteristic of the NNS discourse is the high frequency of unanswered elicits (UAE), average for the six trials =18; NS trial=0. Figure 4 (below) is a sample transcript representative of this phenomenon. One participant makes attempts at maintaining a conversation with his partner and has his 'overtures' unanswered.

Participants (NNS2) are from the same ESL class as NNS1. As this portion of the transcript begins the participants are in the process of browsing the storyboards.

A: first subject
 B: second subject

1: A: ((points to screen))
 You want this, or this more, the last one?

2: B: /nice

3: A: It is Japan, no? Japan.

4: B: ((no answer))

5: A: This is in Japan.

6: B: /ya

7: A: Do you know what is is this?

8: B: ((no answer))

9: A: Now write. What you want to write? You need to write?
 (('silly' facial expression))

10: B: ((laughter))

11: A: Write something nice? ((begins typing))

12: B: ((no answer))

13: A: This picture is .. Ah, nothing happened ..
 innn, in Japan?

14: B: /period

Figure 4. Sample transcript - NNS2

Lines 1, 3, 7, 11 and 13 above are examples of elicits that went unanswered. This represents a pattern common throughout the NNS trials: one participant (typically the one in control of the mouse) attempts to pull the other into a cooperative, conversational mode while the other maintains focus on the computer screen and does not respond. Tuning out one's partner could, on the one hand, be due to the fact that they are juggling two forms of input (human and computer). This may be just taxing enough that the shortest route to making the task more manageable is to tune out what is, potentially, the most demanding aspect of all: conversing in a second language with another limited speaker of that language and managing self in relation to another human while simultaneously maintaining reference to a conversation with the computer. On the other hand, the physical configuration in a sense legitimizes 'giving up'; the computer screen is a ready distraction upon which to focus one's attention and thereby avoid the risk of losing face by revealing no comprehension or by making errors. The machine's presence can serve as a face-saving device by pulling one's attention away from one's partner and in effect legitimizing minimal responses or no response at all. In terms of "face" consequence, moreover, when students do off-line, face to face problem solving, a problem-solving space is established and the majority of the task is to reconcile individual differences, histories and belief systems brought to that space so as to reach consensual solutions through negotiation and merger. Sorting through alternatives takes place in a playing field populated by different views and value systems. In one sense a 3-way task with the computer may represent a very safe place for language students. Whereas off-line outcomes are committed to through open articulation, through action

most often open to peer judgement, on-line task processes are not subject to such extended social consequences. Committed actions are not requisite to the computer-centered configuration. Granted there are consequences, but these consequences are manifest in how the machine responds, how the software 'reacts' to input. Signaling a decision to the machine, as most computer users will readily concede, can be a thoroughly mindless act (Salomon and Gardner, 1986). Systems accept with equal alacrity mindful, committed user action and a mindless click, touch or carriage return. Consequently whether one, both or no member of the pair is committed and has truly invested in making a decision, becomes irrelevant. This lack of lack of consequence in conjunction to a "turn face to save face" strategy need to be considered when examining NNS pair processes.

Overlaps and Echoes

In conjunction with the high frequency of these unanswered elicits, nonphatic overlaps and echoes have a high frequency and may also be contributing to poor conversational maintainance. When Speaker B overlaps Speaker A with "nice" (line 2), the overlap expresses not solidarity, but dissonance. Similarly, repeating back what one's partner says (echo), though the intention may be phatic, serves again to create distance rather than syncopation. Like ignoring completely what is said (unanswered elicits), nonphatic overlaps and echoing may be partially face saving strategies.

Phatics

In terms of specific involvement markers 'missing' from the NNS discourse that are recurrent in the NS conversation, the sharpest contrast in frequency is in the use of phatics (verbal strategies used to indicate solidarity). Below (Figure 5) is a breakdown of the actual phatic utterances used by the NS. Whether or not these same markers were used by the NNS is also indicated.

PHATICS

NS	NNS
yeah	X
definitely	
I really don't know	
I don't know	X
I think...right	
Uh	
that might be	
Oh	X
...or something	
ah ha!	X
right	
ah	X
to tell you the truth	
like	

um	
who knows	
okay	X
er...	
let me see	
maybe...	X
jeez	
welll	
whoops	
uh huh	X
MMM	X
NNS ONLY	
Nice	
Aye	

Figure 5. Breakdown of NS/NNS use of phatics

Directing Signals

The second category of involvement markers for which there is a notable difference in frequency is directing signals. Used to manage and direct the course of conversational interaction, these signals can be considered key in the efficient and effective maintenance of conversation. Below (Figure 6) is a list of the signals the NS employed during their session. Note the signals that the NNS did not use.

DIRECTING SIGNALS:

NS	NNS
anyway	
oh	X
so	X
do we..or..	
but	
ah but	
you see	X
yeah but	
all right	
maybe	
now	X
well	
let's see	
okay	X
we want to	
what else	
I wonder	
here we are	

Figure 6. Breakdown of NS/NNS use of directing signals

The major focus of the analysis of the NS discourse is on patterns

used when maintaining what are essentially two streams of discourse, one with the partner and one with the machine. The NS pair produced rich and varied conversation that was consistently targeted to each other with no shifts in focus as was the case with the NNSs. The high frequency of what is here being termed involvement markers in the NS discourse as compared to the low frequency for NNS leaves us with the question of whether there is interdependence between the use of such markers and conversational quantity and complexity. In other words, do involvement markers lubricate communication channels between two subjects interacting with each other and a computer so that more is said and said more eloquently if they are used?

Discussion

Explanations for the paucity of conversation between language learners with the computer as stimulus were originally speculated upon: 1) the computer-as-human metaphor that predicted, by virtue of its very design and likelihood of users' prior experience interacting with the machine one-on-one, that the machine would demand user focus and a stream of interaction of its own and 2) the language requirements for this configuration would be problematic for NNS.

The NNS trials were marked by continual shifts in focus from the human interlocutor to the machine and back. In delimiting aspects of NNS conversational negotiation, Ellis (1986) emphasizes the requirement for NNS interlocutors to send "clear signals" to one another to keep the conversation going. In face-to-face conversation without a computer, much of this maintenance is achieved non-verbally (Laver, 1975). Given a physical configuration where non-verbal communication is restricted, like that of pairwork at the computer, interlocutors must resort to using other tools, *verbal* tools, to compensate. As is evidenced in this small study, this population of NNS is not apparently versed in employing the kinds of verbal involvement markers that the NS used in negotiating the situation and maintaining communication.

Implications

The one-computer-two-student configuration is a demanding proposition for NNS. This study, as well as a number of earlier ones, finds that the discourse they typically engage in is consequently meager. By contrast, the NS in this study engaged in what is characterizable as communication-rich interaction in spite of the configuration's inherent 'obstacles'. In accounting for this marked contrast in discourse, specific tools used to maintain conversational involvement emerge as a distinguishing feature. NS clearly possess not only an extensive repertoire of these maintenance signals but are also versed in making these work to sustain involvement in a task that is not necessarily conducive to conversation; i.e., with the machine as a participant/distractor.

The results of this study confirm the assumption that the computer-as-human metaphor drives patterns of interaction on the

part of paired language students. Computers and software are in fact built for single users who reflectively and actively engage in tasking with them. In contrasting NNS discourse with that of NS given the same configuration, it can also be concluded that the social and cognitive limitations the configuration imposes can be overcome and complex human dialog can ensue. Analysis of the NS dialog as compared to the NNS reveals that what the NNS seem to lack to compensate for these limitations are linguistic tools with which to negotiate a working framework and subsequently maintain open channels of communication with their partner.

As evidenced by the NS trail, there are routine involvement markers employable in this configuration that appear to help keep the human-human exchange going. This observation provides a potential starting point for raising issues and identifying the conversational maintenance techniques that may be required by the configuration to keep channels of communication open. By developing a sense of three-way user discourse, language teachers can begin to consider alternative approaches to pairing that takes advantage of the split-focus nature of the configuration and/or that incorporate emphasis on involvement markers to assist NNS in managing conversation on-line. By orchestrating and encouraging use of this kind of language, teachers can further their work toward achieving the overall goal of communicative language teaching. By orchestrating tasks whereby students gain practice in using tools that are germane to the negotiation of meaning in this real life context, they also provide students access to and practice with tools that help *keep the conversation going*, a skill that is naturally integral to and highly valued by communicative language teaching as well as one that affords the NNS maximal comprehensible input.

The bottom line appears to be that NNS need *some* assistance, some guidance in working cooperatively in this three-way configuration. Results of this study imply that this guidance may be in the form of verbal tools such as involvement markers that they can employ.

Conclusion

Students of diverse nationalities come to all language learning activities equipped with culture-specific conventions concerning how things are done. The ESL teacher typically exploits these differences and puts them into an arena where students learn about other cultures and value systems while practicing English. She also orchestrates such exchanges so that specific functions, structures and lexical groups are the focus and, therefore get practiced. Understanding the dynamic and the discourse inherent in paired NNS at a computer can provide the means for teachers to do likewise for cooperative machine-centered work.

Whereas computers are environments of alternatives where something is presented and corresponding reactions occur based on selections made, in human-human interactions the alternatives are neither boolean nor algorithmic. By examining the complexities of human-human-machine

interaction, we can begin to consider ways in which student-student exchanges might be facilitated in light of the strengths, limitations and corresponding linguistic aspects inherent in pairing language learners with multimedia systems.

Appendix: Sample Involvement Markers by Category

Statement as question:

We listen to the other pictures?

Word as question:

pinata?
mountains?

Tag question:

don't we?
doesn't it?

Confirm tag:

right?
yeah?
how's that?

Suggest cue:

Why don't we...
It's probably...
Can you...

Directing Signal:

anyway..
do we...?
Okay...
should we...?

Phatic cues:

woops
yeah
uh
but I really don't know
I don't know
You know

Prefacing:

Well...
I wonder...
So...

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