

## TRIADIC SCAFFOLDS: TOOLS FOR TEACHING ENGLISH LANGUAGE LEARNERS WITH COMPUTERS<sup>1</sup>

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### ABSTRACT

Active communication with others is key to human learning. This straightforward premise currently undergirds much theory and research in student learning in general, and in second language and literacy learning in particular. Both of these academic areas have long acknowledged communication's central role in successful learning with the exact intricacies of instructional conversations and the forms these take having been the focus of close analysis (Cazden, 1988; Gee, 2001; Nystrand, Gamoran, Kachur, & Prendergast, 1997; Tharp & Galimore, 1991; van Lier, 2000). In this examination of computer-supported classroom discourse, specific forms of instructional conversation employed by a veteran elementary teacher of beginning-level English language learners (ELLs) are examined. The focal teacher orchestrates instructional conversations around computers with children whose immediate needs are to learn the English language, specifically the "language of school" and the concomitant social complexities implied in order to participate in mainstream instructional activity. With these goals shaping language and literacy activity, their ESOL (English for speakers of other languages) teacher makes use of the computer to capture, motivate, and anchor learner attention to, and render comprehensible the target language they hear and see on and around the computer screen. The anatomy of the activity she orchestrates around the computer and the language she uses to support it -- labeled here as *triadic scaffolds* -- are the focus of analysis. Forms and functions of triadic discourse (teacher, learner, computer) are examined for their potential unique role in second language and literacy instruction.

### INTRODUCTION

Computer technology is being widely used in classrooms as a means of supporting instruction. Concurrently, much attention in the education research community has focused on instructional technologies generally and more particularly on the critical role of *contexts of use*; that is, the situational features and verbal instructional dynamics that can accompany computer use (Garner & Gillingham, 1996; Kumpulainen, 1996; Lankshear & Snyder, 2000; Meskill, Mossop, & Bates, 1999; Wegerif & Mercer, 1996). This analysis examines the communicative dynamics of an experienced English for speakers of other languages (ESOL) teacher working with her students around computers. My interest here is to present particular patterns of instructional discourse that are at once (a) making distinct referential use of the physical features of the computer and (b) accomplishing second language and literacy activity in ways that make good pedagogical sense. In this case, the guiding notion of good pedagogical sense is rooted in what Gee (2000) points to as critical elements of effective literacy instruction: a "judicious mixture" of (a) learner involvement in their language and literacy learning ("immersion in a community of practice"); and (b) instructional language ("overt focusing and scaffolding...[to] focus learners on the most fruitful sorts of patterns in their experience") that supports learner acquisition of a community's practices (p. 5-6). This analysis of instructional conversations around computers is an attempt to closely detail and explicate such mixtures in action.

## The Language of School

The number of children in U.S. schools for whom English is their second language is nearing five million and growing. While ELLs are expected to master the English language, they are also expected to learn academic content in the very language they are in the process of learning. In short, their instructional needs are multiple and complex. Language is, after all, essential to virtually all aspects of daily life. It is key to improving one's lot and imagining different worlds. Likewise, schools are brimming with language: lectures, directions, advice, admonitions, facts, fantasies, and dissings. It would be difficult to disagree with the notion that something as critical and pervasive as language should be featured and so treated in schools. Yet the trend has traditionally been for language to be treated as a given, a prerequisite -- not as essential to all learning (Schleppegrell, 2001; Short & Sherris, 2004; Snow & Wong-Fillmore, 2002). Moreover, "organizational structures in schools give or deny students access to an apprenticeship to the discourses of academic success" (Gebhard, 1999, p. 551). Nonetheless, children need language that provides access to the practices of their various communities (Lankshear & Knobel, 2003).

A characteristic of at-risk learners -- both native and non-native speakers of English -- is that they may not be communicatively equipped to engage the everyday scripts of school-based activities, activities for which most middle class, "mainstream" students have been prepared since birth (Delpit, 1995; Gee, 1990, 2000; Heath, 1983). Rather, children come to school versed in the experiences of their homes, their families, and their home culture -- cultures comprised of complex ways of knowing and communicating -- where what Bloom calls a "theory of mind" is firmly established as a foundation on which children's native communicative repertoire is formed at a young age through social interaction with others. This is accomplished through observing parents' and peers' ways of understanding, talking about, and being in the world (Bloom, 2001; Bruner, 1996). How a child's home and community understand and communicate about the world and how this is manifest in U.S. school culture can be quite dissimilar (Cazden, 1988; Heath, 1983; Michaels, 1981; Soto, 1997).

Recent recognition that mastering language use is first and foremost a social process that involves humans relating to one another in effective and productive ways has taken precedence over older notions of language as a body of knowledge that can be broken down into discrete pieces and taught accordingly (Lantolf, 2001). When learning the first, or native language children actively learn the ways of knowing, talking about, and doing the world by working out the intentionalities of those around them. Learning a second language can be viewed as comprising similar processes. The human imperative to work out the intentionalities of others is central to a child's development of a theory of mind -- an essential understanding of the self in the world -- that accounts for the ways language connects with the immediate social context. With a foundational understanding of language learning as a social/contextual process that benefits from opportunities to interact with others (van Lier, 2000; Wilkinson & Silliman, 2000), language teaching professionals typically engage students in activities that make what learners see and hear in the target language salient, referenced, noticeable, and comprehensible, with understanding having relevant consequences: in short, an "authentic need to comprehend and act accordingly" (van Lier, 1996, p. 248) with immediately perceptible consequences (Asher, 1988).

Correspondingly, instructional activity that has as its goal initiation into the world of school discourses -- those ways of talking that have become institutionally sanctioned or "normal" (Gee, 2000) -- must be crafted and guided in order to render what gets said and done salient and meaningful to learners. Consequently, the structure of a typical language learning activity might be as follows: A need to engage is established and a context is orchestrated that sets up a particular relationship between aspects of the physical or social environment and learners. The resulting activity -- where sight, touch, and speech unite -- becomes the locus of learning. Such structured activities make use of "enhanced input," language that has both clear visual referents and whose forms get *noticed* by students (Schmidt, 1995). Language teachers further enhance their aural input through salience-building intonation, prosody, and visual accompaniments of all kinds (gesture, object, facial expression). Such complexes of instructional

elements have been variously referred to as "affordances" (van Lier, 2000), "optimal samples" (Cook, 2001), and "instructional conversations" (Tharp & Gallimore, 1991).

### Computers and Language Teaching/Learning

Adding the computer into the instructional mix affords many opportunities for this sort of language learning activity. Learning what language sounds like, looks like, and means can be supported and enhanced through teacher and student talk about what they see on the computer screen (e.g., an instructor verbally directing a child's sizing and placement of an image). Thus, specific verbal instructional strategies known widely as teaching "scaffolds" can be facilitated by virtue of the physical properties of the computer. Wood, Bruner, & Ross's (1976) definition of scaffolding is instructive in this regard. Their four-component definition of instructional scaffolds can be readily applied to what the presence of the computer accomplishes in the instructional conversation: a) what appears on the screen can be viewed as *reducing the size of the task so the child can complete it*; b) what appears on the screen and what changes to it are possible can be viewed as *keeping the child's attention in the moment*; c) what appears on the screen can facilitate *making salient relevant features*; and d) what the teacher says and does in reaction to what appears on the screen can be viewed as *modeling ways to accomplish*. Each of these four key characteristics of scaffolding involves more than the language used per se. Each involves strategic instructional moves that, as a complex whole, are at the heart of the craft of teaching. The presence of the computer potentially amplifies such moves. Indeed, recent research on computer-supported learning contexts indicates that these interactional routines can provide the kinds of stimulation and anchoring of language so central to the language learning process (Cummins & Sayers, 1997; Esling, 1991; Meskill, Mossop, & Bates, 1999; Meskill & Mossop, 2000a; Newman, 1997).

Second language and literacy learning contexts that promote and sustain the social construction and negotiation of meaning-making are widely considered as optimal (e.g., August & Hakuta, 1998; Snow, 1992). In light of such optimal contexts, Meskill, Mossop, and Bates (1999, 2000b) propose specific physical features of computers that are especially supportive of joint meaning-making and instructional conversations. Features such as *publicness*, *instability*, *anchored referents*, and the *anarchic nature* of computers can be viewed as enabling acquisition-oriented activity when skilled language professionals take instructional advantage of them.<sup>2</sup> A language educator can make use of the visual representations of a word or picture on the computer screen (a public, anchored referent), to communicatively reinforce word, phrase, and sentence-level meaning. Further, she can direct learners to manipulate what they see on the screen (publicness, anchored referents, instability) thereby reinforcing the aural/visual aspects of the language she is teaching. If a student wishes to exercise her own volition by changing what is on the screen independent of the teacher's directives (anarchy), this also becomes a rich venue for immediate, referenced target language learning. From this perspective, computer screens can serve to anchor attention to forms and functions in immediate, highly tangible, and communicatively authentic ways.

The following analysis focuses on the computer-supported instructional scaffolding of an ESOL teaching professional as she uses computers to teach beginning-level English language learners the language and literacy they need to participate in the everyday academic activities of their school. Special focus of these instructional sequences is given to the interplay between the teacher's utterances, the features of the machine, children's responses, and what these together accomplish instructionally.

### CONTEXT

"Mrs. M" has taught English to non-native speakers in the same mid-size, post-industrial city school district for over 30 years; the majority of that tenure has been as the sole elementary ESOL specialist in the district. As such, she has traveled between the district's elementary schools to teach groups of mostly low socioeconomic status (SES) English language learners (ELLs). Over the years, this role has come to include serving as the main liaison between schools and ELL families as well as the wider immigrant

community. She regularly sees that children receive the medical and social services support they need; this can mean "pounding on doors. Making sure kids get to the dentist even when I've got to drive them. That they've got a winter coat to wear to school" (interview with Mrs. M).

Mrs. M's main objective during her 30 years as an ESOL professional has been to do everything in her power to ensure that her English language learners are equipped with the linguistic and cultural skills they need to actively participate and succeed in school. She sadly describes how the ELL children she has worked with over the years have been subjected to gross misunderstanding, racial abuses, and all out anger on the part of their classroom teachers and other school personnel. This is mainly due, she observes, to school personnel perceptions that ELLs' lack of responsiveness is "rude and disrespectful when these kids aren't understanding or that they don't know how to respond." To these ends, she works intensively with her students on basic oral and written literacy, content area language and accompanying concepts, and the appropriate verbal and non-verbal ways of "doing school" that will gain them access to the academic/school discourse that surrounds them. This is her stated way of combating the negative reactions her students tend to experience: She immediately teaches them comprehension and responsiveness techniques they need to appear cooperative, to fit in. She accomplishes her multiple instructional goals through modeling, guidance, and investment-building that are profoundly respectful and caring.

Each elementary school in the district uses the ESOL "pullout" approach to ELL instruction. Children leave their regular classrooms to come to Mrs. M's room daily for 45-minutes of intensive ESOL instruction. The remainder of their day they spend in the mainstream classroom from which they are "pulled out" and where they receive little or no linguistic/instructional support. Mrs. M's class sessions are held in a small private room. The room is bright and cheerful with posters on the wall. There is a table where the teacher plus 4-8 students can work together. Two computers line the wall to the side of the worktable. As soon as the children enter the room, Mrs. M engages them in level-appropriate conversation about their clothes, the weather, their health, the class they just came from, their family, and the like. After these informal yet always instructional conversations, Mrs. M's sessions typically consist of group table work that focuses and prepares students to successfully engage in subsequent language and literacy activities that she orchestrates around the computers. Like most language instructors, Mrs. M makes use of software not designed specifically for ELLs. Instead, she uses native-speaker software that aligns with the theme of the class's current work and that can be used in ways that support learners practicing target language around the machines through interaction with their teacher and peers. She uses content-rich games, simulations, and productivity tools to complement her instruction. Sample themes of these activities are the alphabet, colors, animals, shapes, geography, and food. These topics steer focal academic vocabulary and each activity consistently integrates the five language skills: listening, speaking, reading, writing, and pronunciation.

### **Data Collection and Analysis**

Mrs. M's sessions with two groups of ELLs were audio recorded with field notes made of non-verbal components of the activity over the course of 3 months. In addition to a 1 1/2 hour culminating interview, all informal conversation with Mrs. M before, during, and after class sessions was also recorded. Transcripts of Mrs. M's classes and her comments about them were successively coded on a number of emerging dimensions. Through processes of review, revision of codes, and re-review, labels were assigned to verbal and non-verbal actions on Mrs. M's part that formed part of the *triadic scaffolds* seen as predominating her work with ELL children around the computers. The construct *triadic scaffold* grew out of observing a preponderance of similar verbal routines around the computer coupled with the fact that these routines appeared to most accurately characterize Mrs. M's approach to exploiting computers for their overall attention-getting and maintaining quality as well as the continuous opportunities they afford for language and literacy learning. Descriptions of these verbal strategies and what these were intended to accomplish were checked against interview data with Mrs. M as were the labels for the roles played by

the computer. These data collection and analysis activities comprise an attempt to capture the special computer-supported techniques this one very experienced teacher employs to coax and support children's English language and literacy learning.

### ***Triadic Scaffolds***

Data consist of transcripts of classroom interaction and interviews with the participating teacher. Three coders, one of whom was the author and all of whom were language-teaching professionals, examined, discussed, and independently coded classroom and interview transcripts. Coders initially employed Meskill, Mossop, and Bates' (1999) unique features of electronic texts (publicness, anchored referents, instability, and anarchy) in their attempts to make sense of the role of the computer in these instructional conversations. In addition, commonly favored second language teaching strategies (modeling, echoing, recasting, and the like) also served to guide analysis. Through discussion and negotiation of, and ultimately agreement on, terminology, select classroom data came to be coded by a set of (a) teaching strategies (both verbal and nonverbal, global and local); (b) the role of the computer in the instructional scaffold; and (c) what these combined (teacher + computer features) strategies appear to accomplish and what the teacher reports them as accomplishing. Due to their tripartite nature, these verbal instructional strategies came to be characterized as triadic scaffolds -- three dimensions of an utterance that at once aims to teach language, is fashioned to be instructional, and references the computer in a sociolinguistically and instructional way.

Triadic scaffolds are thus comprised of and were coded as follows:

- 1) S - a teacher verbal strategy
- 2) C - contribution of the computer
- 3) A - what the strategy accomplishes

Those instances of strategies reported effective by the teacher -- those that appeared to accomplish her aims -- are clusters of verbal routines (including gesture) that clearly connect with learner investment in language and literacy learning with the computer. Two excerpts containing triadic scaffolds -- one from each of the two pull-out classes observed -- are explicated below. The first involves two second graders and the use of an alphabet game to reinforce pronunciation, vocabulary, spelling, and listening. The second involves three fourth graders and the use of an animal game to reinforce vocabulary, pronunciation, spelling, and listening. In both cases, the aim is less what the design of the computer software might dictate, and more the thematic focus and conversational opportunities for language and literacy work that its use affords. Illustrative triadic scaffolds are in bold with their components explicated in boxed, bolded text.

Four second-graders are transitioning from table-work to computer-work. They have been preparing for the computer time by reviewing the English alphabet and sound-letter correspondence. They work in pairs with an application called Alphabet Express, software designed for beginning readers whose native language is English. In the following, the pair of boys, Joe and Sam, work under Mrs. M's guidance. Mrs. M's stated instructional aim here is to teach listening, speaking, vocabulary, reading, and pronunciation simultaneously through talk and activity around the computer screen.

*The children get settled in front of the computers. They are visibly excited.*

T: *(while the software is loading)* **What's this?** *(pointing to mouse)* **Do you remember? Ohh, the what? Sam, What is it called?**

**The mmmmm..., the mmmmmouse.**

Joe: The mouse.

T: *(Smiles at Sam and picks up the mouse.)* The mouse! Right!

*(Children become even more excited at the sight of the program coming up*

T: *(Pointing to title on screen)* **What's going on? What is this? The...The Alphabet Express.**

Joe: We do R.

[a few minutes later]

T: Whose turn is it? Whose turn is it first? *(T takes Sam's hand off mouse. As T asks question, repeatedly takes Sam's hand off mouse, until turn taking is accepted.)*

Joe: *(Raises hand and looks at T)* My turn.

T: It's your turn? Whose turn is it, Sam, is it Joe's turn? Yes?... yes? Now

listen, listen please. *(they listen to directions for the alphabet software, "Click on the pink button")*

Let's click on the pink button. Click on the pink button. *(Joe clicks pink button)*

**Whose turn is it?**

Joe: **It's his turn.**

T: **It's his turn.** *(Sam clicks next button)*

*(to observer: That took like a couple of weeks, his turn, my turn, your time. But they*

*have that. It's really great for listening.)*

**Who's coming?**

Joe: **The train**

T: **The train. Who's coming, Sam?... click on the train** *(Sam clicks on the train)...* good. Whose turn is it now?

Whose turn? Sam, whose turn is it?

Joe: My turn

Sam: *(points to Joe)*

T: Whose turn is it? It's Joe's turn. Let me hear you say that... It's Joe's turn. So what should we do today?

Joe: R

T: R. Is R ok with you Sam? OK, R it is. Click on R. *(points to screen, Joe clicks on R)*

**S=teacher verbal strategy**

**C=role of the computer**

**A=what the strategy accomplishes**

**S=directing**

**C=anchors referent**

**A=attention to form and meaning**

**S=echoing**

**C=anchors referent and attention**

**A= attention to form and meaning**

Figure 1. Triadic scaffold: second graders

Two trios (one girls, one boys) are working at the computers using *The Animal Game*, a colorful software application designed for native speakers of English to learn the names and families of animals. Cathy, Fiona, and Rachel work together under Mrs. M's guidance.

In this brief excerpt, Rachel is watching the others, waiting her turn. Learners had previously reviewed animal names and their pronunciation during table work. Again, Mrs. M's stated aim is to work on listening, speaking, vocabulary, and reading simultaneously in an authentic context.

The trios have been taking turns playing an identification game. The computer used by one trio is not playing sound.

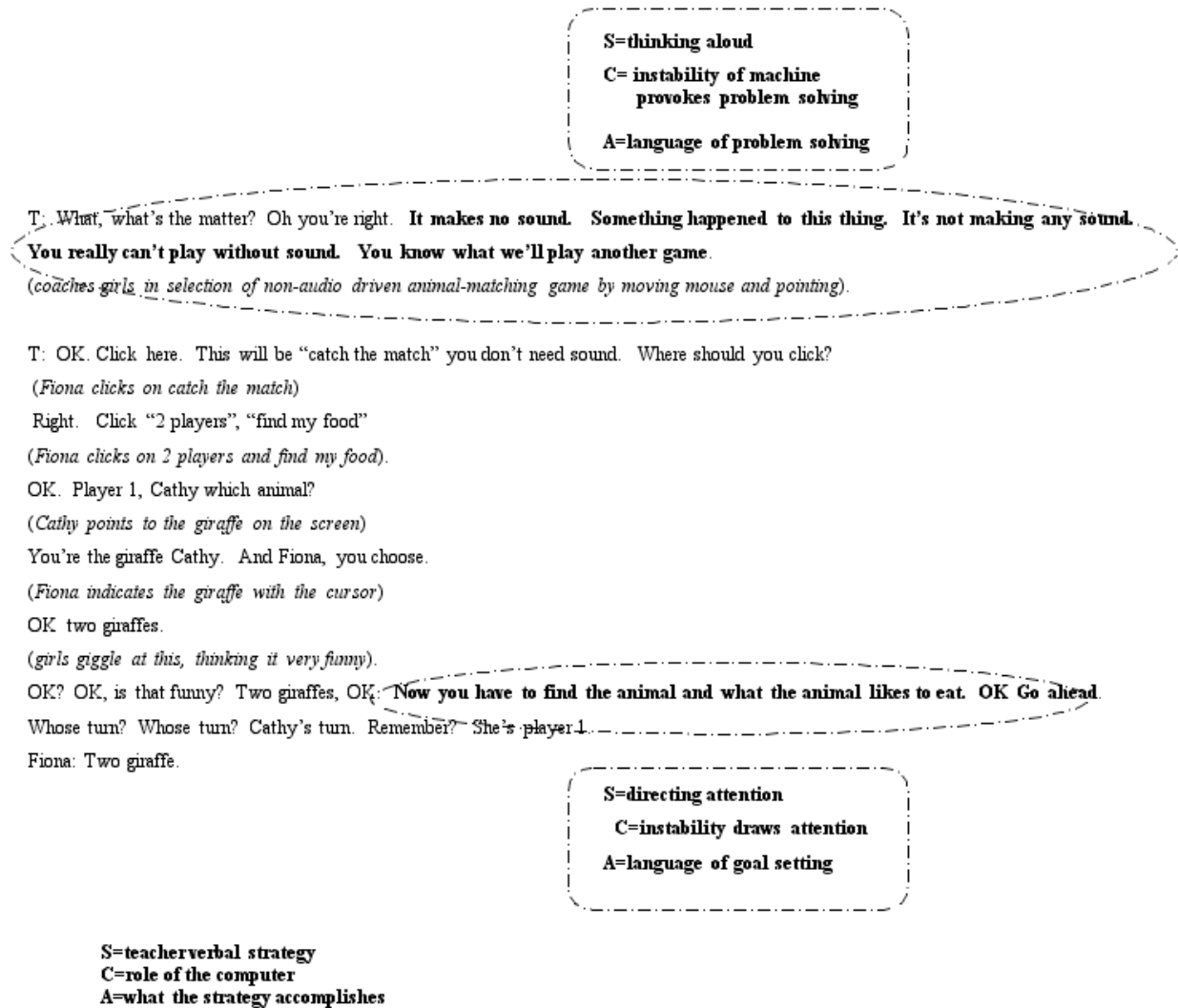


Figure 2. Triadic scaffolds: six mixed ability, mixed (2 second, 4 first) grade ELLs

Highlighted and labeled instances of triadic scaffolds in Figures 1 and 2 are typical of the routines Mrs. M uses to teach language and literacy skills to beginning-level ELLs as they use the computer. In these two cases, children are newcomers and as such speak and understand very little English. It is important to note that as they advance, so too will the complexity of the language Mrs. M uses in these scaffolds. Typical teacher verbal strategies with these beginning-level learners such as directing, questioning, echoing, and focusing accomplish language learning goals; the computer serves to physically support and motivate attention while at the same time providing referents for the language in use. In all cases, talk and

action are immediately perceived (public), situationally cued (anchored), and subject to both the machine's instability and to learners' individual or collective volition (anarchy). Children's responses to these scaffolds are continually evidenced in their attentiveness to the activity at hand, their continual non-verbal responses to the verbal scaffolds (pointing, moving the mouse, nodding, keying, smiling, etc.), as well as their verbal responses which, for beginning level language learners are both an accomplishment and a clear indication of successful progress in acquiring the language. Moreover, Mrs. M reports that she hears her students using the language that they learn while using the computer in other school contexts: "They use what they learn with me on the computers all the time. I hear them. Their teachers hear them. It's great."

In the first sample triadic scaffold above (Figure 1), Mrs. M uses the verbal strategy of directing ("What's this? Do you remember? Ohh the what? Sam, what is it called?") with the accomplishments of getting the children situated to use the computers, the sociolinguistic accomplishment of learners responding to aural directives and questions in English that are representative of school talk, and focus on the sound /m/ in mouse. The computer serves to provide an immediate, visual, anchored referent and thereby anchors the children's attention on what the teacher is saying, what they ought to be doing, and the literacy material they see on the computer screen. In the second triadic scaffold, Mrs. M uses an echoing strategy to reinforce the language these children need to acquire ("It's his turn"). The children learn the basic language of turn taking, making requests, giving and responding to directives ("The train"), and, almost incidentally, the pronunciation and spelling rules of the words on the screen. In this instance, the computer motivates and anchors the children's attention to these interactions while guiding them to affect the right outcome on the computer screen. She comments, "They get so involved with what I say and what they're doing on the screen that their comprehending becomes really easy for even the most basic beginners. They get it so quickly so I see them saying the same things I say within a couple of days."

With the older students in the second excerpt (Figure 2), the instability of the machine (it will not play sound, but may offer other options) focuses learners on attending to the language of problem solving being modeled by their teacher: "You really can't play without sound. You know what we'll play another game." This is high level language that Mrs. M is making accessible by virtue of the instability of the machine and their collective actions in response to that instability. Likewise, in the final triadic scaffold, Mrs. M provides the aural component for the learners' decision-making process while focusing the girls' attention on the information on the screen and the procedures required by the animal game. We can observe Mrs. M again using the language of directing to model and reinforce the language of school with the computer anchoring and motivating the children's language and literacy learning. The children consequently learn the language of goal setting and problem solving as modeled by Mrs. M and made possible by the instability and unpredictable nature of the machine and, again almost incidentally, the names and pronunciation of jungle animals.

In spite of the often "directed" feel to this teacher's talk, these interactions are eminently social in nature with children fully involved and responsive. The children's careful attending to what gets said and done is clearly evident; their acquisition of the language that gets used and scaffolded is likewise apparent. This is in contrast to the rest of their day in the mainstream classroom where there is little support for comprehension nor opportunity to participate. In Mrs. M's class learners actively participate in the conversation by moving the cursor around the screen and clicking the mouse as a form of response while Mrs. M models and forces meaning out of language that is directly related to sight, action, and the immediate social milieu. Each bit of talk is anchored to what is seen on the screen and to the social process of manipulating it and moving forward. She reports, "I am amazed at what I, whatever vocabulary, whatever activity I do with them, how it could be reinforced so easily now."

The forward movement evident in the activity requires collective collaboration in order to not stall. What is seen, said, and done to keep things moving along is, therefore, consistently relevant and salient -- precisely what the language acquisition process thrives on. The children moreover enjoy a certain degree



of control over the interactions as they are the ones holding the mouse, controlling the keyboard, and thereby directing the action. Opportunities for action are inherent when learners have physical/decisional control over what appears and happens on computer screens. With the language routines they learn in order to participate successfully in this kind of cooperative work, moreover, they are equipped to access the academic discourse that makes up the bulk of their school day as well as participate where they may not have before.

Skilled language teaching professionals consistently use what anchors they have available to exploit the aural-visual-action interface. This type of scaffolding -- scaffolding that is particular to second language and literacy instructional activity -- has characteristics that mark it as unique from the traditional sense of the term. Scaffolding in the Wood, Bruner, and Ross (1976) sense describes verbal moves on the part of an instructor that, while initially controlled by her, gradually guides responsibility over to the learner. In second language and literacy instruction, scaffolding has a three-fold purpose. Language teachers not only scaffold learning in the traditional sense of cueing, supporting, and sustaining thought, but employ the added dimension of tailoring learner attention to both the forms of talk and accompanying visual referents to which that language corresponds in the immediate physical and social environment. Such calculated instruction requires continual use of an internal syllabus for each individual learner so that scaffolds can be implemented to give "support to the edge of a child's competence" (Gaskins et al., 1997, p. 45). In the case of children who also need to learn the language of school, a dimension of scaffolding becomes the modeling of school discourse and how it enjoins the ways school gets done. As composites, then, the triadic scaffolds used by Mrs. M reflect Gee's judicious mixture in that (a) learners are directly mentored into a community of practice; (b) their learning is overtly scaffolded by a skilled mentor; and (c) learners' attention is deliberately focused on "fruitful patterns" (the English language they need to learn).

## **DISCUSSION**

While Lemke (1995) sees a monologic, controlling tendency in technology, he paradoxically also sees technology as a means of breaking old patterns of social reproduction. For, as new technologies become more widely available, the univocal transmission of voice through one teacher, or one school administration will become less sustainable. However much the presence of technology may imply equilibrium, the issue of traditional modes of social reproduction in schools that appears to be going on in these classroom conversations must also be addressed. If we turn to the broader context of these children's learning and the social/pedagogical imperatives expressed by the teacher, we can see that her aim is to strengthen her students' voices and participation and thereby avert what might otherwise end up being an "ESL ghetto" (Valdés, 2004). Her aims are continually informed by immediate practical matters of survival for these children in a context where understanding the language of school is socioacademically crucial. Mrs. M is consequently ever watchful of the tenuous relationship between children's development of school-based language and literacy and their development of a theory of mind in their second language so that they have less risk of joining the ranks labeled "left behind": "These kids need to feel like they can do school, that they can participate like everyone else. I try to help them with that, with the English they need."

Some have suggested that having children use computers as tools for learning increases motivation in children who are less likely to be motivated by school (Burns, Griffin, & Snow, 1999; Sharp, et al., 1995). Mrs. M's ELLs are no exception. Indeed, she reported several anecdotes where children who otherwise "removed" themselves from the school community by keeping their heads down on their desks, crying, acting out, and behaving in ways that revealed strong disconnections with school, became highly motivated and animated when the computer was turned on.

I became most excited when we had this little boy John ... John was unreachable. He was just, he was a first grader, very little bit of English. I couldn't get John to color. I couldn't get him to even

get excited about using markers. Nothing turned John on. He had his head down on the desk most of the day -- in his regular classroom and with me. And I was surprised by that, because I had other first graders and we did lots of little fun projects and the other six year olds were joining in, but not John. Then finally we put him next to the computer and Well! He sat up! I couldn't believe it. He had a smile on his face, and he started, I mean his eyes were bright! And I thought my god look at this kid, he wanted to interact, he wanted to do something. That was a real turning point. John wanted to type his name, this is a kid I couldn't get a pencil in his hand, he was so lethargic, wouldn't hold a pencil. And here he's typing his name. It was amazing to me.

Such incidents parallel those of Elliot & Hall (1997) who found that explicit modeling of self-regulating behaviors around computer tasks contributed to better performance of at-risk preschoolers. Indeed the kinds of ongoing scaffolding provided by Mrs. M and those explicitly modeled and encouraged in the Elliot and Hall study are quite similar; both make use of the special features of the computer to anchor and support such strategies. Through this kind of activity, children learn to respond appropriately to oral directives and suggestions, to understand the language and rules of turn taking, and to follow the steps of solving a problem. In both cases, the computer context served to capture and maintain learner attention in ways unlikely to occur offline. The kinds of verbal routines that are used to regulate and model regulation, what Wootton (1997) terms forms of "successive guidance," constitute the major material that initiates children into the discourse communities in which, if they are to be successful in school, they must fully participate (Gee, 1990). Technologies represent potential contexts where active participation of learners, in conjunction with caring teachers, can be orchestrated and orchestrated well (Heath, 1990; Johnson, 1991; Meskill, Mossop, & Bates, 1999, 2000a; Palumbo & Bermudez, 1994).

Studies of learning with and around computers consistently point to a teacher's planning, orchestration, and moment-by-moment support of learning as being critical to successful instructional activity. Nowhere is this more the case than with non-native English speaking children from diverse backgrounds for whom the social norms and accompanying discourses of school are new and challenging. This experienced instructor exploits the machines in her classroom to stimulate children's enthusiasm for learning while exploiting the computers' special language and literacy affordances in ways that model, guide, and initiate learners into ways of doing school. Mrs. M's talk is dense with triadic scaffolds. Cross referencing what appears on the screen with her comments and directives is continual. On a moment-by-moment basis, we can observe her capitalizing on the physicality of the computer to orchestrate language and literacy learning. She exploits the computer for its capacity to draw and maintain learner focus, stimulate problem-solving, anchor discourse, and encourage learner-directed talk and action.

## CONCLUSION

Oftentimes a lack of understanding on the part of educators concerning English language learners places their education in jeopardy. A key conceptual obstacle to understanding these students' needs is the folk assumptions that the language and complexities of "doing school" are inherently obvious. This folk model can spell disaster for those whose cultural/familial backgrounds do not mirror nor prepare children for these complexities. "The verbal abilities that children who fail in school lack are not just some general set of such abilities, but rather specific verbal abilities tied to specific school-based practices and school-based genres of oral and written language" (Gee, 2001, p. 724). Indeed, such cross-cultural situations can become exacerbated when unequal power relations are also at work (e.g., child-adult, parent-teacher; see Darder, 1991; Schleppegrell, 2001; Scollon & Scollon, 2001). In school, those in power, teachers, use talk that reflects an "implicit model of literate discourse" that too often neither considers nor accommodates learners who have yet to be initiated into this specific genre of communication (Cazden, 1988, p. 14). Deconstructing the obvious is the ESOL specialist's first line strategy: Undertaking careful analysis of what children need to know in a given context. Her second is to orchestrate instructional activity that apprentices her students to learning language that can help them navigate and participate.

This seasoned teacher's instruction with computers and ELLs employs specific strategies that exploit the physical features of the medium to assist children in learning the language that will help them navigate these contexts. She uses the public feature to anchor language and attention to language. She makes use of the unstable feature to model problem solving and the language through which it can take place, and the anarchic feature to encourage learner volition and autonomy. For Mrs. M's ELLs, these instructional sequences are just the beginning of their guided immersion into the world of the cognitive academic language they must master to participate in the mainstream, a process that risks derailing if the foundational language of doing school is not first mastered and used to access institutional streams of meaning. At first blush, what Mrs. M does with her learners may look like social reproduction of mainstream discourse structures, and indeed to some extent it is. However, equipped with the language that gains them access to, and acceptance at school, these children may be better poised to claim their identities and participate in the (re)shaping of schools than were they not so equipped. As active participants they are positioned to construct their contexts of being and learning, a process that benefits from inclusion as opposed to exclusion.

Technology represents no magic bullet for the problems of schooling. Indeed, empirical studies of programs of excellence for ELL children continue to point to excellent teachers as the prevailing influence on school success (Burns, Griffin, & Snow, 1999) and that exemplary uses of technologies with elementary students are typically driven by constructivist models of teaching and learning (Becker, 2000; Berg, Benz, Lasley, & Raisch, 1998). This examination of Mrs. M's teaching reaffirms the critical role of caring, thoughtful educators in meeting the widely varying needs of ever-changing populations of school age children while illustrating ways that computers can be thoughtfully integrated into language and literacy instruction. Delineated strategies and routines for giving and guiding the voice of at-risk English Language Learners as they use computers can serve as a basis for future empirical work on computer-supported learning dynamics as well as points for modeling and discussion in professional development in computer-assisted language learning (CALL).

## NOTES

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2. The following is from Meskill, Mossop, & Bates, 1999:
  - a. PUBLICNESS: The feature of publicness is defined as public nature of electronic texts that prompts, supports, and facilitates rich discourse on the part of learners and their teachers.
  - b. INSTABILITY: Electronic texts are unstable. Information appears, disappears, and changes. Relational structures of information is often invisible. This lack of predictability provokes the kind of thinking and conjecture reflected in critical thinking and the literacy/acquisition oriented discourse that accompanies it.
  - c. ANCHORED REFERENTS: Electronic texts provide immediate concrete referents to which talk can be anchored. This is most frequently manifest in learners and teachers pointing with their fingers or with the cursor (mouse) to something on the screen that illustrates (anchors) their talk and thus both meshes aural and visual, and form-meaning correspondances.
  - d. ANARCHY: This feature directly contrasts with traditional linear/hierarchical forms of representation characteristic of the print medium, especially school-based print. This feature is defined

as learners exercising volition and control over the order and direction of their interaction with electronic texts. Evidence is discourse and action that reveals learners interacting with information in an anarchic, rather than preset, linear fashion.

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