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Computers as Tools for Sociocollaborative Language Learning

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Our brief history of using computers in second and foreign language instruction has taught us that machines, in and of themselves, do little to enact learning. Yet, the perceptions of efficiency and expediency that accompany things technological persist and in part account for our captivation with associating things technological with more productive learning. However, just as putting a child in front of a book does not guarantee mastery of its content, mere proximity to vast, colorful information on our new machines in no way insures cognitive engagement, let alone the needed practice with and consequent development of the language and literacy skills that render such engagement productive. What this period of experimentation with computers in teaching and learning *does* indicate is that the power of the medium lies in how well it gets used and integrated into the daily classroom scheme so that active engagement in acquisition-oriented work takes place; that is, through integrated, sociocollaborative processes that value active thinking and action with language being both tool and target of the activity. This view of teaching and learning is in keeping with current beliefs concerning the value of learner-centered pedagogies as opposed to teacher-, or in this case, machine-centered approaches. Casting the machine in the subservient role of tool in the service of the larger goals and contexts of instructional communities reflects predominant conceptualizations of teaching and learning in general, and second and foreign language instruction in particular.

This chapter discusses instructional practices that involve learners in acquisition-oriented tasks and examines how computers can be exploited for such activity. I present an anatomy of sociocollaborative language learning with technologies that represents the integration of machines for the purpose of establishing and sustaining thought and accompanying discourse that is productive to the language acquisition process. The underlying belief behind this model for sociocollaborative practice with computers is that computers alone do not stimulate optimal acquisition processes but their *use* can affect unique climates and contexts that support acquisition when larger contextual elements -- tasks, and teacher/peer modes of interaction -- are working in consort.

Perspective

A key underlying assumption is that language learning is facilitated by use of the target language in content-rich and purposeful ways while an active awareness of the forms and functions of language used is maintained. This assumption finds support in recent theoretical work (Ellis, 1985), empirical work (Lightblown, 1990; Schmidt, 1993), teacher training materials (Brown, 1994; Nunan, 1991; Scarcella & Oxford, 1992) as well as in the design and imperative of contemporary language textbooks. In short, it is held that purposeful communication in the target language renders receptive the complex of our affective and cognitive makeup to what we say, write, and understand in the target language. Receptivity and reciprocal active processing result in what is believed to be optimal acquisition.

This perspective also includes recognition of the vastness and richness of learners' knowledges and experiences that they bring to the learning environment and sees these resources as needing to be valued by and incorporated in the learning community (Lee, 1995). Learning, especially learning language, is perceived as a socially mediated process that involves the individual in the construction of knowledge with others (Vygotsky, 1986). It is in through active interaction that language learning activity mirrors genuine human communication, the chief locus for understanding the world and self. This perspective also sees content richness as central with language best acquired through learning about, manipulating, and negotiating understandings of content in the target language. Finally, this perspective acknowledges that, unless learners plan to become experts in linguistics, language itself makes poor content about which to think and communicate.

Sociocollaborative Learning

Across disciplines substantial headway is being made in devising and implementing thoughtful, pedagogically grounded uses of computer technology. As human access and machine efficiency increase, professional educators continue reconceptualizing ways that machines can serve current beliefs and best practice. There is likewise growing recognition across all disciplines of the potential superiority of student-centered, cooperative models of learning when computer use is involved. This is supported by a growing body of empirical research that suggests such learner-centered approaches may yield the same or greater cognitive and affective benefits to students than more traditional modes of teacher-centered and/or machine-centered instruction (Collins et al, 1991; Fletcher, 1985; Johnson & Johnson, 1992; Light & Blaye, 1990; Mercer, 1994; Nastasi & Clements, 1992; Nichols & Miller, 1994; Slavin, 1995). In the field of second language acquisition, it is likewise widely accepted that knowledge is built through discourse and that rich discourse contexts that promote and support effortful negotiation of meaning are contexts that are optimal loci for acquiring a second language (Bygate, 1988; Cohen, Lotan & Leecher, 1989; Ellis, 1986; Johnson, 1995; Pica, 1994; Savignon, 1991).

Learner-centered approaches value the co-construction of knowledge in general and, in the case of language acquisition, the construction of communicative skills as central. The second language profession has long valued student-centeredness with pairwork and small groupwork being a mainstay of instruction (Johnson, 1995; Long, and Porter, 1985; Savignon, 1991). The oral/aural negotiational aspect of teacher and task supported student-student configurations is seen as a powerful venue for second language acquisition to occur. Such configurations, in combination with well designed and orchestrated language learning tasks, represent opportunities for learners to manipulate interdependent chunks of the target language in complex ways that see immediate, contextual affect.

The complex of linguistic, affective, and cognitive benefits of such activity and how these play out during motivating, goal-based tasks contrasts sharply with traditional instructional methods where learners are 'fed' discrete chunks of language. Unlike instructional approaches where forms are presented and exercised in a controlled manner, task-based negotiations place significant syntactic and semantic demands on the second language learner; demands more in keeping with 1) active acquisition; and 2) how language is actually used and acquired outside of a controlled classroom setting. Realistic oral/aural practice, in conjunction with the reading and writing that task-based instruction typically incorporates, contributes a great deal not only to second language learners' overall proficiency, but to the acquisition of skills and strategies they can put to work on their own so as to best exploit the target language environment for their own, ongoing language learning.

The optimal role for language learners is active. It is through active participation in thinking and using the target language that the opportunity for language acquisition is maximized. Examination of learning contexts where computers are used to enable and support student-centered tasks reveals that features of task and medium in consort contribute to optimal, *active* student engagement. For example, the discourse dynamic with and around machines tends to render power and control of talk to learners (Meskill, Mossop & Bates, 1998; Papert, 1993). Learner control of talk, or topic control, is widely held as an essential component of second language acquisition (Johnson, 1995; Long & Porter, 1985). When the creation and manipulation of screen displayed information is in the hands of the learner (mouse and keyboard control), the topic of verbal exchanges around that information is more typically the immediate user's domain rather than that of the teacher or other, more orally dominant students. Learners can, in other words, exercise their emerging language and discourse skills to represent their independent ideas and understandings. This is in sharp contrast to other environments where the teacher and more vocal students tend to take the lead and maintain topic control during instructional activities. The former mode of active learner engagement is clearly superior in supporting the acquisition process and the overall development of a competent user of an additional language.

In addition to allowing a great deal of learner control, there are qualities of the computer medium that mitigate learner autonomy and collaborations. One of the most salient medium-specific qualities is the "proxy" role the screen can take on for the learner. The screen can serve as a *locum tenens* for the learner's developing target language voice when the means of oral or written expression for her work, her thoughts, her ideas, is not yet fully established. The 'communicative stress' (Brown and Yule, 1983) inherent in oral tasks may be alleviated by virtue of this feature and periods of reflection characteristic of working on a computer. Visually representing in process thinking and attempts at symbolic representation of that thinking is easily facilitated by the large, public quality of the computer screen. The virtual/tentative nature of the information on the screen, moreover, invites the sharing and joint shaping of thinking processes. Well constructed language learning tasks exploit the public nature of instantiated thought and action to promote collaboration among learners and their instructor. The tenuous and malleable nature of what appears on the screen can also stimulate active exchanges regarding what is being seen and done. Information appears in any number of forms, changes, disappears, and evolves as it is thought

about and discussed. In terms of these simple inherent features, the machine can be considered a natural springboard and catalyst for supporting and complementing sociocollaborative language learning activity.

A Task Anatomy for Sociocollaborative Language Learning

Sociocollaborative language learning tasks can be characterized as what Cohen (1994) terms “multiple ability tasks” (p.68); that is, tasks that drive conceptual work rather than simple routines. She outlines the qualities of the multiple ability task as follows:

- Has more than one answer or more than one way to solve the problem.
- Is intrinsically interesting and rewarding.
- Allows different students to make different contributions.
- Uses multimedia.
- Involves sight, sound, and touch.
- Requires a variety of skills and behaviors.
- Also requires reading and writing.
- Is challenging.

Cohen, 1994:68

In addition to driving conceptual work, Cohen’s multiple ability task features align with active, participatory, meaning-centered tasks that language instructors strive to design and orchestrate. The valuing of various perspectives - more than one way of seeing and solving a problem - and differing sorts of contributions on the part of learners are particularly relevant for heterogeneous language classrooms representing a range of cultures and social/educational strata. The intrinsic interest, challenge, and reward of Cohen’s tasks are characteristic of both Krashen’s criteria for comprehensible input (Krashen, 1985) and the long acknowledged importance of motivation as a critical component to in the language learning process (Crookes & Schmidt, 1991). Finally, the engagement of multiple modalities (site, sound, tactile, aural) is also viewed as a highly positive contributing factors for the language learning process (see, for example Meskill, 1997).

To collaborate means that learners, more capable peers, and instructors work together toward shared goals. For sociocollaborative language learning tasks, the process of doing so is considered the primary locus of learning the language under study given a well integrated focus on the forms and functions of language throughout. The following anatomy for such tasks that make use of computers has evolved primarily from the close study of exemplary uses of technologies with learners of English as a second language in U.S. public schools (Meskill, Mossop, and Bates, forthcoming). In these contexts, native speaker software products are used to teach language through academic content, composing, and problem-solving. This reflects a growing trend in the U.S. for language professionals to make use of software products and telecommunications that are designed not with the learner of another language in mind, but for mainstream native speakers (Meskill & Mossop, 1997). The tasks that these practitioners devise reflect Cohen’s multiple ability task criteria and possess additional features reflected in the anatomy. Where these contexts are specific to second as opposed to foreign language learning, task features and the community of learners inspired by these approaches are nonetheless applicable to foreign language contexts.

The teachers we have been working with are applying the general tenets of communicative language learning and fashioning an eclectic balance of sociocollaborative and form-focus activity with and around computers. The tasks they design can be characterized as providing ample opportunities for differing perspectives and opinions, for controversy, disagreement, resolution, and consensus building. They motivate active participation and interaction oftentimes by having no one single answer or process to employ in accomplishing them. Some form of problem-solving (something for which computers are particularly well suited) is a highly prevalent characteristic. Designating roles for individual learners and teams to take on as they engage in these processes is also a common feature and one that helps situate learners within a community of participants.

Teachers weave into the goals and processes of such computer-supported tasks a motivated awareness of the forms and functions of language used. Instructors promote awareness of integral forms and functions through pre-teaching, modeling, monitoring and encouraging monitoring of input and output, ongoing encouragement and scaffolding, and through task debriefing. In these teacher-orchestrated sociocollaborative environments, we see onscreen visual representations of thought and action serving as anchored referents used to guide and support simultaneous attention to form and the meanings form conveys. What appears on the computer screen is predominantly words and images through which and about which active, anchored discourse occurs.

Sociocollaborative language learning tasks have parallel, integrated goals and processes as follows:

- motivated discourse
 - (absence of key information for solving a problem)
 - (requirement of providing rationale/justification for decisions made)
 - (designated roles learners must take on in order to negotiate information)

- motivated awareness
 - (presentation of language foci)
 - (ongoing monitoring by learner, teacher and others)
 - (consequences for non-awareness)
 - (focus of debriefing sessions)

A well designed task is tailored to the specific learners, learning community, and instructional goals of that community while maintaining parallel foci on constructive, meaning-centered talk and attention to the forms of the language used in the process. In addition to attention drawn to specific language forms (motivated awareness), language routines required for sociocollaborative activity are simultaneously practiced. Discourse routines such as beginning and ending a conversation, turn-taking, and negotiating the meaning of content are inherent in the goals and processes of sociocollaborative tasks. What makes the computer ecology unique in this regard is that there are features of the machine that support these forms of learner-centered interaction when the ecology is so constructed and maintained. Learners in such environments exhibit an enormous amount of control over both what happens on the computer screen and the direction and outcome of talk and writing about what they affect in the way of this public display. There is decidedly more topic control, risk-taking, tolerance of ambiguity, and co-construction of meaning when learners are actively using the medium for task-specified ends.

The activity that comprises sociocollaborative language learning tasks, then, has as its main enterprise motivated discourse accompanied by an awareness of the forms of language being used. As such activity is learner-centered, a task framework includes consideration of individual and collective identity: 1) what learners bring to the task in the way of personal and collective knowledge and experience and the language they both have and need to express these; and 2) what learners will take away from the task in the way of information, accomplishments, creations, puzzlements, hypotheses, and queries that will be used to further learning and collaboration.

Figure one (below) represents a framework for task components that lead to effective sociocollaborative language learning activity.

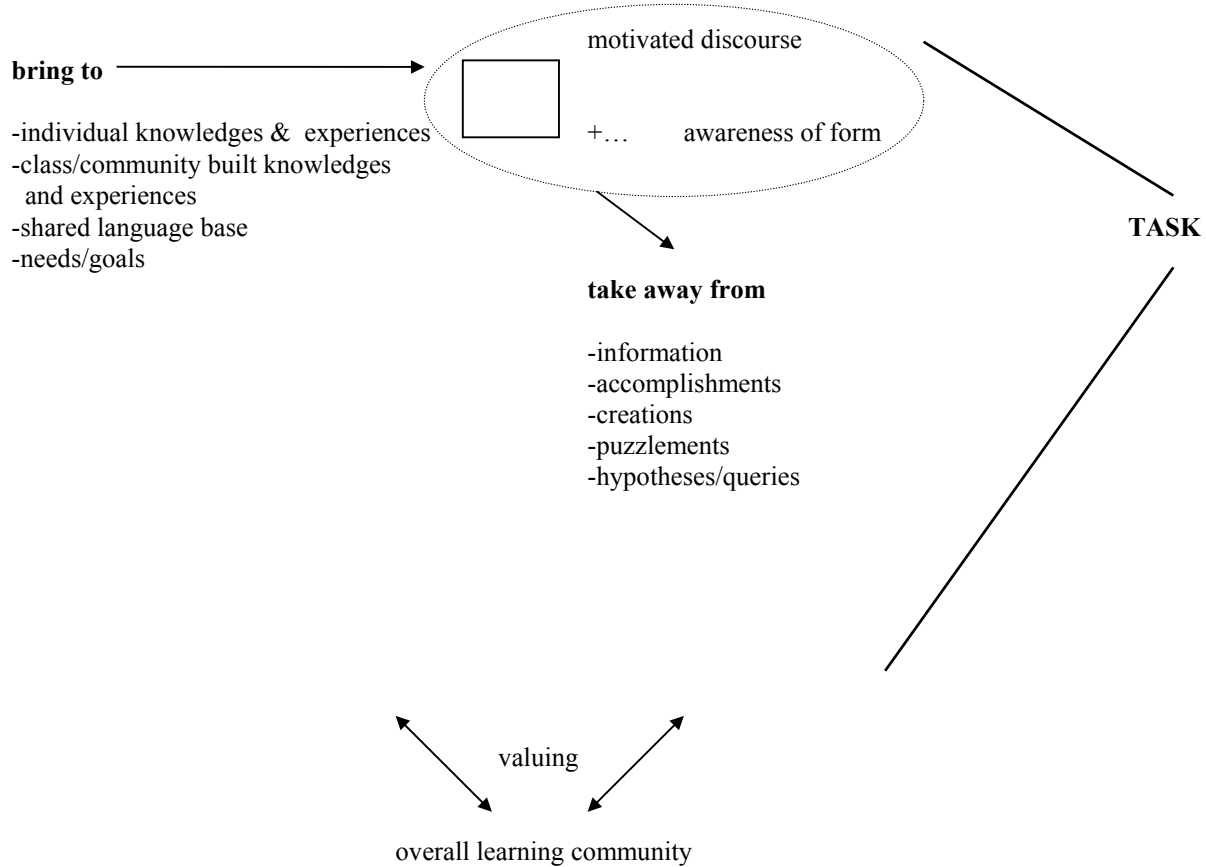


Figure 1: Anatomy of Computer-Supported Sociocollaborative Language Learning Tasks

Figure 1 (above) represents the way computer-supported tasks and their processes can comprise a convergence of learner identity, teacher support, content relevance, and the valuing of the activity as an integral contribution to the overall learning community. Task design, implementation, and moment-by-moment support are correspondingly aligned with learners' needs, goals, and experiences. What learners 'take away from' machine-supported processes serve as both tangible accomplishments and fuel for further reference and expansion.

The box (+...) in Figure 1 represents the computer or computers. As part of designing tasks around one or more machine, available resources (software, telecommunications opportunities) need to be evaluated for their utility in supporting language learning tasks. The following section outlines many of the collaborative places, or analogous spaces, the computer potentially represents and sample tasks these spaces can support.

Analogous Spaces

It is the instructor who devises, orchestrates, and supports sociocollaborative language learning tasks. Consideration of the specific attributes and potentials of a given computer resource is a relatively minor undertaking in light of these larger demands. The following analogies are used to present a broad framework for considering the potential exploitation of commonplace resources on the computer.

-interrogation space

A place where information can be interrogated (searched).

-workbook

A place where questions and exercises are undertaken.

-storybook

A place where stories can be read, heard, and explored.

-creation space

A place for writing, creating visual representations, publishing and archiving.

-virtual world

A simulated environment.

-dialogic space

A place to communicate with others.

Interrogation Space: Extracting Information

Computers are repositories for large stores of information. As the quantity of and ease of accessibility to that information continue to increase, so too do the number of options we as teachers have for designing tasks to exercise its retrieval, the language and literacy skills involved in its retrieval, and implementing tasks that make use of the information available to provoke constructive thinking and its accompanying discourse. In its role as interrogation space, the machine is an information repository to which learners can turn to undertake, for example, a quest, a mission, or a fieldtrip. For such problem-solving activities, learners need to be oriented, briefed, and well equipped with the language skills and guidance in the critical thinking strategies they will need to enter the space, locate information they determine to be in keeping with the mission, extract it, and bring it back into the arena of discussion, synthesis, and active use.

For lower-level language learners, designing tasks in which they simply scan Internet pages to identify a small collection of new vocabulary items -- in text and/or graphic form -- can serve multiple linguistic and literacy purposes. For example, learners can be assigned to physically locate an assigned list of items (e.g., common household items). In the process they are guided to amplify and apply what they already know about these semantic categories and their probable arrangement in a given information format (mail order catalog sites, for example). Common household items in a Website advertisement or any CD-ROM application that contains visual and written representations of these items can serve as material.

A well orchestrated task around such interrogation spaces sees learners collaborating to find and utilize what is, in this example, very simple information: words. Including the element of mystery or a gap in information that can only be filled or resolved through learner-learner negotiations will guarantee that motivated collaboration occurs. Beyond the vocabulary identification goal, additional competencies can be engineered into collaborative extracting of information tasks. Through analysis of task requirements, we can identify the following sample language task requirements for beginning level learners:

Functions:

Suggesting
Locating
Directing
Offering

A built-in awareness of an inherent syntactic form such as singular/plural forms for nouns, will round out the activity

Syntax:

singular/plural nouns
demonstrative pronouns
prepositions of place
imperatives

Let's

Workbook: Challenging oneself and others

Traditionally heralded as the best possible application of technology to language learning, the workbook (drill and practice) form of computer assisted language learning remains prevalent among publisher offerings. The workbook continues to be a common format, although drills are now frequently disguised in impressive graphics and entertainment-oriented functionality. Learners have been quick to see beyond the frills and recognize that what they are doing differs little if at all from off-line workbook drills where a single answer to a multiple choice, cloze, labeling, or combining activity will be assessed, not any thinking, activity or creativity on the part of the learner, but simple algorithms. Indeed, a recent survey indicates that language teachers need to resort to coercive measures to get learners to work at even the most colorful, 'interactive' workbook exercises for more than a single, short period of time (Meskill & Mossop, 1997).

For sociocollaborative purposes, however, learners can capitalize on the workbook format to jointly develop questions and cloze exercises with which they can challenge one another. Workbook-style software is widely available in all disciplines. As a tool for sociocollaborative, acquisition-oriented tasking, workbook format software that deals with lesser known or unknown discipline-specific language (e.g., physiology, an historical period, math word problems) can be utilized to great benefit. Because the language (though quite probably not all the concepts) may be new, learners can be assigned tasks which require them to negotiate content for several purposes: to exercise deductive meaning making with new vocabulary items; to locate, extract and share unfamiliar items; to help those unfamiliar with concepts attached to new vocabulary to learn these; to help those familiar with concepts, but not necessarily with the corresponding terminology in the target language to articulate; and to promote active sharing of new concepts and new labels for those concepts in socially motivated ways.

Functions:

Asking for information
Explaining
Asking for clarification
Making deductions
Agreeing/disagreeing

Syntax:

WH-questions
Declarative statements
Conditionals

Storybook: A Place to Enact Literacy Events

Computer-mediated tasks naturally incorporate reading to understand and writing to communicate; they are not, in other words, limited to the classic (strong) version of communicative approaches where oral/aural input and output is preeminent. Computers are essentially text-based and as such require interaction with text at various levels of engagement. Applications that are specifically text-like (e.g. storybooks, electronically available works of literature) typically have the kind of content and interactive features that potentially motivate reading and peer interaction around reading. Common interest in themes and characters as well as sharing connections between what is seen and heard and learners' life experiences can be crafted into tasks that promote purposeful, experientially motivated peer exchanges.

Tasks around the storybook space can be tightly orchestrated by the teacher through task assignment (e.g., prepare a report in a specific format with prescribed features to share with the rest of the class) or learners can develop their own cooperatively determined outcomes (e.g., a skit or collage based on the text they read). In either of these or other scenarios where the storybook itself can serve as a tool to promote and sustain sociocollaborative processes, structuring and supporting learner engagement depends on careful design of task and ongoing teacher scaffolding and support of active collaboration.

Language focus:

Modeling and initiating learners into the discourse of stories.

Expressing Opinions
Agreeing/Disagreeing
Reflecting

Creation Spaces: The Palette, The Workspace, Presentation Space

The computer screen is a place where individual and group experiences and creativity can be expressed in many and varying forms. The challenge of doing so is less mastery of the many tools available to accomplish the creation - this is an important kind of learning that is at once incidental and activity that engages meaning making. Composing and creating in a large, public forum (a computer screen) is activity that inherently gives voice to what learners may not otherwise be capable of expressing the target language. The process of designing and constructing a screen resembles and therefore exercises the kind of internal planning and editing of target language output that learners need to engage in across levels of proficiency. In the case of doing so with the computer, however, this activity is time independent; time for internal reflection, planning, and editing; time and opportunity also to manipulate, edit, and refine what appears on the screen. The opportunities for collaborative, constructive discourse interaction around creation spaces are many. There is the internal dialog and problem solving in which the individual creator engages in relation to an immediate audience (classmates and teacher). There is also the incidental co-collaboration that occurs when learners are in the process of creating independently. By virtue of the screen's publicness, a learner's work is essentially open to critique on a moment-by-moment basis.

Software packages whose tools facilitate the many instantiations of user creativity on the screen can be considered creation spaces: widely available utility and productivity tools and packages are particularly useful in this regard. Specially designed packages that stimulate and support user creativity within specific semantic domains are particularly useful for lower level language learners whose comprehension can benefit from limiting parameters of semantic fields. One such package, *Once Upon a Time* provides a creation space for story writing and illustrating that limits semantic domains in just this way. It defines parameters to supplied sets of semantically grouped words and pictures that learners can make use of in their creations. Unlike straight utility programs (word processors, graphics utilities, presentation-building tools) that require parameter setting on the part of the instructor through task construction, these kinds of packages have built in meaning categories in which learners can work. It is up to the instructor to measure the relevance of these software-internal categories in light of the goals and processes of her specific learning community and, when deemed compatible, devise pre-online and post online processes that situate and value learner creations.

Language Focus:

How-to discourse
suggesting
defending
critiquing
commenting

Virtual World: The treasure hunt

Simulating environments is something computers, and computer software of late, does very well. Learners can consequently immerse themselves in rain forests, shopping malls in foreign countries, or fictitious crime headquarters. Language learners can explore, gather, and query simulated target language environments using the target language and, in the case of foreign language learning contexts, the target culture. Task creation in relation to the virtual world analogy aims at involving learners in these worlds for purposeful exchanges about and interactions within these worlds. The purposefulness of learner immersion must, of course, be thoughtfully planned, orchestrated, and supported.

Like the Interrogation Space analogous space, virtual worlds are places where learners can be assigned to locate specific information for specific purposes. The additional element of immersion in a simulated environment that must be logically traversed to achieve the assigned goals naturally provokes and sustains the discourse of collaborative problem solving. If a group of intermediate-level students is required to document the habitat of a specific species of Amazonian bird, for example, they may be required by the structure of a simulation package to navigate through dense jungles and across dangerous rivers to meet that goal.

Language Focus:

Navigating
Locating
Identifying

Dialogic Space

Electronic communications within and between learning communities for the purpose of sharing cultures and experiences is becoming a commonplace part of everyday language learning activity (Cummins & Sayers, 1997). Class tasks and projects can be designed to be undertaken collaboratively at two levels: 1) between and among learners in the local environments; and 2) between learners in the local environment and another non-local group of learners. The structure and motivation of these collaborations can be driven by a form of information gap: one group has information, opinions, or experiences that the other group needs to be privy to in order to accomplish their local task. One elegantly simple example of this kind of task is for learners who are studying the daily customs of a non-local culture and need to make electronic queries to the non-local group. Eliciting the needed information electronically requires collaboratively planning (What are the appropriate questions? What is the appropriate form with which to ask them?) and synthesis (How is information best presented to the rest of the learning community? Comments and suggestions elicited from the learning community?)

The Role of the Machine

As is the case in any physical context where computers are used, in language learning contexts, machines are complex artifacts in the sense of Goodwin & Goodwin (1995); that is, like all contextual artifacts, especially tools used by members of a particular community, the presence of the machine inherently brings about major change in the structure and dynamics of discourse and activity. For language teaching and learning, computers represent unique climates and contexts to promote student-centered activity when the machine is cast in its proper role as *tool* in learner-centered pedagogy. The sociophysical space in which the computer resides in an instructional setting - be it in the back, front, side, center, or closet of the classroom or in a laboratory - speaks a great deal about how the machine and its role get perceived and ultimately used. The computer can consequently get cast as integral or marginal to the classroom society. If, for example, the machine is relegated to a 'private space' - a corner far from central activity - the subsequent activity with and around it will, for the most part, be perceived within the learning community as 'private'.¹ If the computer is centralized both physically and socially, then activity related to it will be perceived as shared and central to the social/academic workings of the class as a whole. There may be times when private work by individual students may be desirable: the risk is in overusing the machine as a babysitter, tutor, reward, or punishment.

Machines, especially when there are several in a laboratory, can be perceived and used as a way to occupy students so the teacher can attend to other matters. Indeed, this notion of 'freeing the teacher' has been a powerful force in educational software marketing. With students productively engaged with the machine, the thinking goes, the teacher can devote time and attention to individual learners. This is certainly a potential plus for language learning contexts where one-on-one communication with a native speaker is highly desirable. However, the teacher can be just as freed to be a co-participant if she has carefully constructed authentic tasks that require active participation and collaboration, rather than individuation, with machines.

The classroom environment that has a single machine -- the "one-computer classroom" -- frequently capitalizes on extracting and inputting information to see the consequence of sociocollaborative off-line decision making. A useful model for this role for the machine is that of the *Decisions Decisions* series by Tom Snyder Productions. In this model, learning is off-line and collaborative. The machine presents problems, the information needed to undertake the problems,

¹ Sociocollaborative tasks are not intended to be strictly collaborative throughout. Independent work both with and without computers may be a component of such tasks. What marks these as sociocollaborative is that any work done on an individual basis is ultimately tied to and valued by the learning community. Work is, in other words, never undertaken in a void. A learner may, for example, work independently to plan and implement a strategy for undertaking a component of the task, but this work ultimately gets appropriated by larger classroom community imperatives.

and simulated outcomes of learners' sociocollaboratively reached decisions. Tasks that involve the single machine are inherently sociocollaborative in that extensive off-line work is required by the learning community in order to get, use, and synthesize information available on the one machine. Beyond software packages that specifically adhere to and guide this form of sociocollaborative learning, the language professional can call on any number of software and telecommunications products and utilities to use in this framework.

In learning environments where many machines are available, environments such as laboratories or electronic classrooms, care regarding the need and desire for learners to collaborate when designing and orchestrating tasks is essential. Laboratories are a good locus for cooperative work in that many screens mean many and varied representations of learners' thinking which, by virtue of its publicness on the screen is subject to more thought and talk. One may argue that in such an environment that this is inherent - that learners automatically share their work and thinking by virtue of its presence on a large, public screen. To some extent this will happen on its own.² However, careful task design whereby learners are required and motivated to exchange, share, and co-build information represents increased opportunity for acquisition-oriented practice: collaborative knowledge-building and the realistic communication that accompanies it.

Towards a Community of Learners

It is widely held that learning builds through discourse (Cohen, 1994; Cazden, 1988; Johnson and Johnson, 1992; Vygotsky, 1982?) and that rich discourse contexts that support negotiation of meaning are optimal loci for second language acquisition (Cohen, Lotan & Leechor, 1989, Ellis, 1991; Johnson, 1995; McGroarty, 1989; McLaughlin, 1985). It is the teacher who designs and implements processes whereby this discourse is established, sustained, and expanded. It is the instructor who engineers discourse contexts that are conducive to linguistic development through talk. It is the teacher who must to some degree relinquish authority in favor of learner independence in thinking and actions that express that thinking. The presence of the computer tends to aid this by leveling the playing field when it comes to authority, control, and social hierarchies. It is, after all, who has the mouse and who affects what's on the screen who calls the shots. However, learners need to be *taught* how to work collaboratively. They need to be taught the *language* they will need to do so. It has been widely documented that, left to their own devices, the agency of the computer in conjunction with learners' lack of strategic language for pair collaboration results in spotty, impoverished collaboration (Abraham & Liou, 1991; Kumpulainen, 1996; Meskill, 1993;) A number of studies on the effectiveness of pretraining sociocollaborative skills prior to having learners work together has demonstrated, however, the success of such an approach (Cohen, 1994; Fisher, 1994; Wergerif & Mercer, 1996).

A key feature of well orchestrated task-based language learning activity is that learners can exercise control over the topic and direction of their thoughts as manifest in the language they are learning. Unlike teacher-fronted instruction, it is the individual learner, in consort with peers, who selects the directs the discourse as they deem appropriate and effective to immediate issues and concerns. It is the learner who has control of the mouse, the keyboard, the information, and, to some extent, the process of learning collaboratively. The language professional can capitalize on this learner control by establishing the precedent that each learner is a knower. She can coach this knowing; especially when it comes to providing a linguistic leg up and prompting task-based conversations to continue. Establishing routines around computers whereby the teacher is not knower but co-participant in the process of discovery is key. Establishing the role of a 'linguistic court of appeals' (Higgins, 1988) is also critical to the nurturing of the instructional dynamic. Where emphasis is on the motivated, effortful act of understanding and making meaning with an awareness of the linguistic tools used in that process external mediation of the dynamic can come from an instructor who establishes herself as a facilitator and resource for language and cultural assistance. Additionally, by modeling the behaviors associated with these roles, the instructor can 'teach' others to act accordingly as facilitators and resources as needs arise.

² Unless one is simply lucky with personalities and motivation, simply grouping learners together without thoughtful tasks, roles, and forms of linguistic guidance is often ineffective (Cameron & Epling, 1989). Without teacher guidance in language, thinking, and the task process itself, students do not necessarily engage in the kinds of cooperative learning activity seen as leading to linguistic and cognitive development (see for example Carrier et al, 1988; Webb et al 1986).

Instructional tasks, by nature, imply roles to be played on the part of learners and teachers. The importance of the role of the instructor during language learning task implementation cannot be overstated, especially in terms of supporting awareness of forms and a focus on self correction, and appropriate use of pretaught forms, functions, and lexis. The instructor draws attention to, makes learners *aware* of these forms and how they operate in use, and assists learners in monitoring their own use of them while they are engaged in task-based work with their peers. This coaching appropriate use of targeted language can serve as a powerful model for learners who can in turn undertake the same kinds of coaching with one another. In designing and implementing instructional tasks around computers, then, teachers build in roles for themselves as orchestrators, facilitators, and participants in these tasks. Contexts where computers serve as tools see teachers using the language of advice, suggestion, and encouragement in lieu of the traditional pattern of teacher-led talk (Kern, 1995; Meskill, Mossop & Bates, forthcoming). Given this role of the instructor, learners are more likely to negotiate meaning, take risks with language, and even tolerate a certain amount of ambiguity as they attempt to resolve both communication problems and the problems posed by the tasks they undertake. Numerous studies have revealed the power of role assignment in instructional tasks in general and language learning in particular. When the computer serves some purpose for the instructional task, the importance of learner roles becomes even more salient (Wegerif & Mercer, 1996). Tasks require that something be accomplished, be it an appropriate word supplied in a cloze exercise or a peace treaty negotiated between warring states. Roles can be functional (do this specific part to help achieve a goal) or both functional and *fictional* (do your part to help achieve a goal in the guise/persona of, for example, a cunning, but absent-minded detective). Roles are best designed to require co-reliance and, at the same time, individual accountability for their completion. Often the element of competitiveness works well to motivate both individual and group engagement. The competitive element can be orchestrated as “learners versus machine”, or “group versus group” with the machine in the middle. In either case, the impetus to complete the task successfully, within a given timeframe, and to a determined level of quality, works to insure task focus, task persistence, and a strong sense of joint responsibility among group members. In assigning roles, teachers may want to consider how to best assign individuals so as to prevent social dominance from occurring with regard to decision-making and, especially, physical use of the computer. Role assignment that encourages an even playing field for group members also works to deepen learner understanding of the communication and problem-solving skills in which they engage.

Again, instructional tasks involve thinking and action on the part of the individual learner operating in a social context. Because thinking and action in a social context are involved, language is the central tool for its accomplishment. In addition to designing tasks, the role of the instructor is to orchestrate and facilitate sociocollaborative activity permeated with attention to the forms and functions of language in use.

Evaluation: Bringing to, Taking away, Bringing back, and Expanding the conversation

As with off-line language tasks, computer-supported tasks benefit from a predetermined focus on particular, relevant forms and functions to which students’ attention is drawn and which they can in turn use productively during an activity. In addition to providing concrete routines for active practice, the provision of attention to specific language routines also provides a focus for self, peer, and instructor scaffolding and correction as well as a focus for activity debriefing: e.g., the class has their use of specific language to reflect on at the close of an activity and as something they can leave the classroom feeling they have mastered. Learners and instructor thereby ‘leave’ a task with a sense of specific language practice goals having been met.

The incorporation of computers in acquisition-oriented tasks represents rich opportunities for two broad forms of evaluation: *formative*, or moment to moment during task processes, and *summative*, whereby learners use the computer to assemble and present evidence of their learning.

First, due to the public nature of student work (the screen) opportunities abound for ongoing formative evaluation of learner understanding and progress. As such, the language instructor can keep the internal syllabus she has for individual learners updated based on what learners do on the computer screen and through their constructive discourse when collaborating about what happens on the screen. There is, in short, ample opportunity for process-oriented assessment. The level of intensity and the duration of a computer-mediated activity may be longer than for similar off-line tasks. The computer is a strong draw for attention and the depth and unexpectedness of software programs can pull attention in directions that may be seen as peripheral to the task at hand. Monitoring learner engagement and task focus is important in this regard, though ideally tasks can value incidental discovery and even be designed so this can be woven into the task’s

goals by having learners articulate their rationale for doing what they do. It is difficult and perhaps not all that desirable for all possibilities and potentiality of a given software product to be accounted for in advance. Room for learner discovery on the other hand, ought to be. Opportunity to share incidental accomplishments, queries, and commentary should be provided. What is 'incidental' needs to be valued as part of evaluative processes related to computer-based work.

Secondly, a particular strength of the medium is its archival and presentation capabilities. Learners can present a body of collected work in multiple forms; an electronic portfolio of this work can provide evidence of competencies as specified by the instructor. Both modes of evaluation can be conceptualized as a 'taking away from' the machine and bringing back information, solutions, etc. along with reflections on the processes of discovering these.

Summary

Machines serve many purposes and can play many different and potentially powerful roles in language learning contexts. Both their context of use and the nature of the software they run interact to represent spaces in which learners can learn and collaborate. Thoughtful planning in integrating computers into the language learning community can well serve the purposes and processes of acquisition-oriented language activity. The successful design and orchestration of tasks that fully exploit these tools for the purpose of language acquisition is contingent on understanding the power and potential of computer-supported discourse contexts, what various computer applications have to offer in terms of analogous spaces, and what individual learners bring to tasks and what they potentially can take away and make use of in contributing to the larger learning community. It is the instructor-designed task and her implementation of it that ultimately shapes learner engagement in acquisition-oriented, sociocollaborative activity.

Sociocollaborative computer tasks and contexts make sense in light of current theory in second language acquisition, cooperative learning, and instructional technology as a whole. Where there is some theoretical soundness and empirical support behind sociocollaborative practices with technologies, a number of directions for further empirical research are indicated. Systematic investigation of the connections between computer-supported discourse and language achievement would contribute a great deal to both the research and practitioner communities. While a great deal of current research examines telecommunications-based discourse for such purposes (Ortega, 1997; Warschauer, 1997), the real time sociocollaborative discourses of intact language learning classroom communities are a little examined realm for research (see Meskill, Mossop, Bates, forthcoming). Additionally, while it is recognized that understanding the nature of human interaction around computer tasks contributes a great deal to software product design (Jiang, 1998; Jiang & Meskill, 1995; Jonassen, 1992; Perkins, 1992), of equal importance is understanding teacher epistemologies that drive effective design, implementation, and support behaviors for effective sociocollaborative tasks. More refined anatomies of intact contexts and tasks that contribute to linguistic development within those contexts would greatly contribute to principled practices with our new technologies for the purpose of teaching and learning language.

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