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**Case studies of the instrumentalization of the computer in Computer-  
Assisted Language Learning (CALL)**

Françoise Herrmann, Ph.D



This book is dedicated to generosity





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## Foreword

Throughout this book, Françoise Herrmann uses her knowledge of linguistics and second language learning as well as her knowledge of computer science and computers in education to develop a state-of-the-art theoretical framework for foreign language education. Her notions lie at the heart of all language learning, building in unique ways on the conceptual intersections of computer-as-tool and the development of language and thought. The theoretical rationale in this book is important reading for language educators.

Judith Langer  
Center for Learning and Teaching of Literature  
State University of New York



## Preface

The Third Edition of the Publication Manual of the American Psychological Association states, "Research is complete when the results are shared with the scientific community." (American Psychological Association, 1983, p.17). This book was written with a joyful acceptance of that responsibility. Thus, there is much pleasure underlying this book. First, there is the pleasure of having participated over the years in experiences that were very rewarding. Secondly, there is the pleasure of having something to share. And finally, there is the pleasure of writing, reading and continuing to learn in the process.

The contents of this book cover four studies where the computer was used as a tool to support and create educational activity systems. These studies were undertaken in very different contexts. The first two were undertaken at the academic level in a French foreign language learning class and in an intensive Summer English-as-a-Second Language (ESL) program. The other two studies were undertaken at the elementary school level in the third/fourth grade classroom of a small alternative public school and in an urban after-school program.

This book is also, and foremost, the product of a focused reflection about the use of the computer in an instrumental mode. Thus, the case studies have functioned both as exemplification and source for this reflection.

San Francisco, California

March, 1993





## **Acknowledgments**

I would like to thank all the participants of these studies as, without their willingness to participate in such creative and intelligent ways, none of the projects would have existed.

I would also like to thank my daughter Jessica for being such a great chum.



## **Chapter I**

### **Theoretical background: Instrumentality and agentivity**

Current uses of the computer in education and in particular language learning and teaching may be seen as dual. Computers may be designed and used as agents and instruments, hence the reference to their instrumentality and their agentivity (Dretske, 1985; Winograd and Flores, 1986) .

Programmed as agents, computers are Tutors, DrillMasters and TaskMasters. They determine such variables of the learning and teaching context as subject matter; the paths of knowledge acquisition and what constitutes successful performance in the form of binary right/wrong, correct/incorrect evaluation; and answer-feedback routines. As such these programs are anthropomorphic and they tend to constitute self-contained learning and teaching environments, which function independently of the classroom context, in adjunct and remedial modes, for example (Papert, 1993). From the learner's point of view these environments present restricted domains of activity where language use is a closed system. This is to say that when learners enter these environments, they use (and consent to use) language according to the rules of the program rather than in ways that would be governed by socio-cultural norms and those regulating interpersonal relationships. As one student has put it, "It [is] frustrating to not know if you [are] in error or if the problem [is] the computer's."

Arising in a tradition of programmed learning with the symbol systems hypothesis generated in the scholarship of artificial intelligence behind it (Simon, 1981; Newell and Simon, 1985), this design of educational computer tools reveals

an endeavor to emulate human behavior and cognition, in particular human communication (e.g., Feigenbaum, 1963). Thus, with the serious cases made by philosophers (Dreyfus, 1972; Dreyfus, Dreyfus and Athanasiou, 1986) and scientists (Weizenbaum, 1976; Winograd, 1974; 1984; 1987 ) who have demonstrated and acknowledged the existence of irreducible differences between human beings and their tools, there is continuous and renewed interest in the Turing Machine<sup>1</sup>. And with this interest the possibility of harnessing those contextual properties of language (whose locus lies in individual human experience) in an attempt to program Socrates (the caring philosopher) in the tutorial dialogue of a new generation of IntelligentMasters ( Sleeman and Brown, 1982; Wenger, 1987).

Programmed as instruments, computers are word processors, communication networks, HyperCard stacks, HyperMedia environments and databases. Designed as instruments, computers are empty programs. They no longer offer a pre-determined subject matter to be learned; nor do they offer explicit pedagogical ways deemed appropriate to impart this subject matter. Rather, they depend on usage for their pedagogical usefulness to be circumscribed, just as their users depend on them for their productivity and the envisionment of innovative collaborative activity. This dance between computer design and computer use has been referred to as the "ontological" property of computer design (Winograd, 1986). It is the philosophical idea that "The world determines what we can do and what we do determines our world" (Winograd and Flores, 1986, p. 177). Thus, a dialectical relationship is at work between computer use and computer design where instrumentality is operational.

Inclusive of the unquestionable build-up of knowledge gained from artificial intelligence and programmed learning, and working from a point of no return to the anthropomorphic assumptions underlying that tradition, computer use in an instrumental mode is harnessed when it supports and creates collaborative classroom activity systems where deep changes are in effect. Thus, for example, using one and a combination of programs (e.g., word processing,

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<sup>1</sup>The Turing Machine is a machine that was envisioned by Alan Turing in the 1950s. According to Turing this machine would be able to think and respond like a human being. Thus, he also devised a test (called the Turing Test) where an examiner questions A and B. When the examiner cannot tell which of A and B is a machine then, according to the test, it is possible to say that the machine thinks like a human being (Rich, 1983; Dewdney, 1992).



e-mail, databases, HyperCard stacks) instrumental computer use has been harnessed to support classroom activity systems such as newspaper production in one class (Herrmann, 1992) and between classes located at geographically distant sites (Barson and Frommer, 1989; The Copen Family Fund, 1991; 1992); in conversations focused on ecological and social responsibility among an international population of school children (KIDS-91, 1991; KIDS-92, 1992); in the simulation of diplomatic activity on a cross-disciplinary, inter-departmental level among an international population of adolescent learners (Brecht, Noel and Wilkenfeld, 1983; ICONS, 1992); in the creation of a yearbook (Thornburg and Allen, 1991) and a local tourist brochure with QUILL (Bruce and Rubin, 1984); in keyboard-pal letter writing (The Apple Global Education project -AGE- referenced in Kurshan, 1991); in intra-school survey activity (Martinelli-Zaun, 1993); in the creation of a classroom problem-solving center (Reissmann, 1990); and in multimedia MediaWorks presentations (Pea, 1989).

In sum, as the above examples suggest, when instrumental computer use is harnessed in educational contexts, deep changes tend to occur where the variables of task, student and teacher roles, and language use are reshuffled in major ways. Further, these changes should be of no surprise when they are juxtaposed to the world outside of the classroom context where the use of computer technology has given rise to a discourse that includes words such as "revolution" (e.g., King, 1983).

Clearly then, agentivity and instrumentality are very different approaches to computer use in education. In the following, these differences are examined in closer detail as the assumptions about language, learning and teaching operational in each of these modes of computer use are uncovered in the different designs.

### **Assumptions of agentivity and instrumentality**

Underlying instrumentality and agentivity, there are assumptions about language use (the object of learning), learning, and teaching (the processes deemed effective to impart knowledge and to create optimal conditions for its acquisition). These are successively examined.

## Language

Language use in agentive programs is represented and objectified. Thus, an agentive program manipulates meanings in the linguistic system as attached and floating symbols, generating and processing strings of these objects. Using both language parsers and complex knowledge representation structures to represent and interpret symbols, agentive programs also manipulate the user's input, transforming it into different objects, which in turn resurface as output in audio, textual and visual forms. This two-way objective manipulation of meanings (in input and output modes) creates programs termed interactive. Thus, for example, a program may prompt the user for the inflectional variations of the verb "to be" and process the user's responses to various degrees depending on the complexity of the interpretive and evaluative modules (e.g., I, you, they \*is; She, it is ). For the user this means opportunities to practice using the linguistic forms of the verb "to be" in pre-determined linguistic contexts rather than using the verb "to be" as in, for example, being happy, being sad, being angry, being content (i.e., in the expression of *experienced* affect).

Thus, with various degrees of audio, visual and textual contextualization and varying degrees of answer processing capacity, agentive programs create a closed system of language use (a restricted domain of activity) whose rules users accept a priori as they enter the environments. For example, when users enter the simulated micro-world of a video laser disc for language learning, there is an agreed upon understanding of what constitutes linguistic choice. Thus, users select, for example, the option of going to market over the option of going to the airport and the program branches the user to the market scene. This communicative activity, however, is reduced to offering situated practice in the use of linguistic strings as human-machine interaction precludes an experienced negotiation of meanings between locutor and interlocutor that would result, for example, in some understanding of the personal, circumstantial, intellectual and affective reasons underlying the choice and perhaps non-choice of going to market over going to the airport. The linguistic rules that govern language use in agentive programs are thus very different from those that govern language use occurring in real social contexts and among live (embodied and experiencing) human beings.

The rules of interaction operational in agentive contexts are different because they do not (and cannot) include the whole spectrum of subjective experience that is *also* operational in motivating linguistic choice in communication<sup>2</sup>. In sum, for example, smart and intelligent performance remain un-differentiated. As one student has put it, "On the computer, if I didn't find the answer in one or two go's, I would do an exhaustive search of all possible answers (not the correct way to do it)." Thus, as Fillmore (1981) and Langer (1987) have observed, learners may be right for the wrong reasons and wrong for the right reasons.

Clearly then, when there is a willingness to accept a consensus over the reduction of meaning to that which is exclusively linguistic, agentive programs may function in anthropomorphic ways as IntelligentTuTors, DrillMasters and TaskMasters and these programs may be termed interactive. Weizenbaum's ELIZA program which emulates a psychiatrist and whose language parser has been a model and inspiration for the design of IntelligentAgents in education, for example, may respond: "For how long have you been swallowing poison?" to the input, "I'm swallowing poison." When this consensus over the manipulation of language use breaks down, however, and both users and designers question the reduction of meaning split off from subjective experience, then it is time to find an altogether different way. In Kuhnian terms, it is time to "shift the paradigm," perhaps even *without* compromise (Kuhn, 1970).

Instrumental programs no longer contain an attempt to generate live language use in both productive and responsive modes. Language belongs to the users of the program, who use it to perform purposeful and meaningful tasks extrinsic to the functions of the machine. Thus, the view of language underlying the design of instrumental programs has been removed from the computer and placed among its users. This shift in the position of language creates a reorientation both in the design of computer applications and educational activity. Thus, the elusive quest to design anthropomorphic agents has been redirected to the design of tools that support human activity (e.g., the spread sheet, the word

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<sup>2</sup> This argument calls in the Chomskyan notions of competence and performance (Chomsky, 1957). Thus, for example, in the competence rule of relativization an infinite number of derivations are possible. In performance, however, physical constraints such short-term memory are placed on the number of possible derivations. Thus, computer interactions may be seen as demonstrating competency of communication in contrast to communicative performance.

processor, the scanner, electronic mail, databases, QuickTime movies), and contextualized practice in agentive educational computer activity has been redirected toward goal-oriented tasks that are no longer programmed in the machine.

In sum, the view of language underlying instrumental modes of computer use becomes experientially subjectified while maintaining the possibility of objectification in social interactions. Language belongs to its users, who choose how to use it and for what purposes. Thus, for example, in the use of electronic mail, a community of users may choose to communicate with each other to perform survey tasks. In that activity there is no pre-established way of determining what the survey questions will be. These may be defined by the teacher in correspondence with a classroom thematic unit on time and temperature (e.g., At what time do you get up, eat breakfast, go to school?) and these may arise unexpectedly in a framework of activity such as newspaper production and the need to insert an autobiographical fact sheet containing information about all members of the production team. The activity and the degree to which the computer functions to support it are not contained in the application. Both depend on the actions of a community of learners and their teacher. Conversely, it is also unlikely that a drill activity would be supported by electronic mail, although the possibility of engaging in this kind of objectified language use remains.

### **Learning**

In agentive programs learning is programmed to include the careful selection and presentation of subject matter; testing of controlled aspects of this subject matter; and the evaluation of performance. From the learner's point of view this means performing deep and surface structure (terms from Chomsky, 1957) manipulations on language objects such as insertions, deletions, permutations and transformations. These objective manipulations may occur in increasingly complex programmed contexts. Thus, for example, subject matter may occur itemized in lists, in sentences, in paragraphs and in stories with audio, visual and motion video components. Similarly, for example, clozing programs may supply increasingly complex control over the clozing procedure so that items deleted at varying intervals may also be deleted by grammatical function, by word and morpho-syntactic types with color coding and hints.

This increasingly complex presentation of subject matter, coupled with an increasingly sophisticated response sensitivity, however, does not really change the variables of task, learning and teaching roles and language use. A microworld has been created for the learner to navigate where objective manipulations of language use occur. As Cunningsworth and Horner (1985) put it when they distinguish between the *speaker* and the *utterer*, "Very basically, in fact, it is possible to differentiate 'speaker' and 'utterer.' An actor on stage quoting Shakespeare and a learner in a classroom responding to drills are both speakers but neither is an utterer. The utterer is the one who decides whether and how to speak and to whom, and who determines the content of his utterance" (p.212).

This anti-climatic use of a potentially revolutionary tool to replicate the unpopular classroom practices of drill and practice and to squelch language use into its objective format has prompted much criticism of agentivity. Underwood (1984), for example, calls it the "wrong-try again" approach. Similarly, Higgins and Johns (1984), look for the indirect benefits of agentivity in the "conversational spin-off" generated by use of these programs. Thus, they observe that when groups of users work agentive programs, "A lot of the language arises out of practical necessity, since only one member of the group can comfortably operate the keyboard. The others will want to play their part in the tasks but can only do so by ordering, suggesting, reminding or persuading" (p.37).

Underlying this controversy, there is the belief from a socio-cognitive perspective on learning (Langer, 1985; Langer and Applebee, 1986) that the acquisition of language use (i.e., communicative competence in Hymes' sense, 1972) occurs most readily in meaningful contexts where there is sensitive input. This input is called "i+1" in second and foreign language acquisition (Krashen, 1982; Terrell, 1986; Vanpatten and Cadierno, 1993) and the Zone of Proximal Development (ZOPED) in at least one interpretation in first language learning (e.g., Engeström, 1986; Griffin and Cole, 1984). And with this belief, comes the realization that perhaps agentive designs cannot provide communicative environments (i.e., real inter-activity with delicate input that would provide conditions for communicative competence to emerge). With this set of beliefs then, there is a strong implication (in Krashen, 1982 for example) that activity occurring in agentive contexts (e.g., inter-activity with programs) does not necessarily result in such learning as the transfer and binding of knowledge,

appropriation and integration (i.e., intra-activity of positive and lasting benefit that could be recycled successfully to other contexts).

The degree to which these strong implications are true is the subject of many effectiveness studies where differential input is compared and where there is a focus on input as a dependent variable (e.g., Kleinmann, 1987; Robinson, 1989). And it is also the subject of many comments about the inconclusiveness of effectiveness studies (e.g., Garrett, 1991; Jacobson, 1993; Kearsley, 1993; Hoko, 1986). Thus, momentarily departing from the vast search for compelling answers to the question of whether, for example, agentive inter-activity can be programmed in sensitive and delicate enough ways to count as real inter-activity and hence lead to intra-activity that is of positive and lasting benefit to communicative competence, we might also focus on what happens when the goal of inter-activity between computers and their users has shifted and the variables of task, student/teacher roles and language use do change. For as the locus of inter-activity shifts, it is possible to include what is left *and* right of the effective input litigations --deeper, to the left into the social and deeper to the right into the existential, where issues of participation (Lave and Wenger, 1991), doing and being-in-the-world co-exist.

In instrumental modes of computer use, input is no longer exclusively controlled by the program. It is assumed that input will be co-constructed in the interactions invoked by the tasks and actions that the learning community engages in (including those among participants that are mediated by the computer). Thus, input becomes both dependent and independent variable (Michaels, 1990). For example, when a group of learners and their teacher are engaged in a computer-mediated newspaper-producing activity system, one student who has committed to writing an article about a local art exhibit will use language as she commits to that activity. She will use language as she strives to understand her aesthetic experience when visiting and *re*-visiting the exhibit; as she discusses her experience in class; as she writes about her experience at the computer; as she makes the effort to harness a new mediational means of productivity (i.e., computer technology); and as she polishes her article to meet publication standards.

Thus, it is assumed that language use in an instrumental mode will travel in different modes and media of communication as a conversation-for-action in

learning that is meaningful and purposeful to each participant and relevant to the group (Murray, 1991). This conversation functions as an independent variable when the focus is on creating conditions for its emergence (e.g., creating a computer-mediated activity system; creating a participatory legitimacy) and it becomes a dependent variable when the focus is on its potential to benefit the development of communicative competence (i.e., when the focus is on its potential to reduce the peripherality of participation). In this learning conversation then, the possibility of objectified language use remains, but this possibility occurs as *timely* conversational episodes of tightened control over input when, for example, the student needs art criticism vocabulary to express her aesthetic experience and when she needs to acquire a particular grammatical structure to express her experience. These episodes of directed, modeled and supplied language use, however, no longer constitute the method and the framework (i.e., the tasks, actions and microworlds through which learning is assumed to occur). These are occurring types of interactions (e.g., *adagios* in the symphony).

Thus, while the cognitive assumptions about the transfer and binding of knowledge; the appropriation and integration of knowledge are still operational, the conditions under which these assumptions operate, have dramatically changed. And it is with an increased awareness of these contextual differences in computer use --the quality of both intra- and inter-actions which circumscribe usage-- that the challenging question of effectiveness may perhaps be transformed into one of being and doing-in-the-world, indebtedness-to oneself (Seem and Kaplan, 1987) and alignment; with consideration, for example, of the relationships that exist with and between such complexifying variables as enjoyment (e.g., Green, 1993; Stevick, 1990); desire to communicate; self-actualization (Maslow, 1968) and love of the object (Papert, 1993). For without these social and cognitive considerations of participation and existence --to the left *and* to the right of the input hypothesis-- the issue of effectiveness (i.e., what works) is uprooted.

### Teaching

The programmed role of the teacher in agentivity is threefold. The programmed teacher carefully selects subject matter to be presented; tests what has been presented and then evaluates the learners' performance. In turn, this process endlessly repeats itself informed by an evaluation of the students' varying



performances. Among the positive attributes of this role there is 1> the "fairness" of the process (the computerized teacher functions the same way for each learner, assuming that learners are all roughly the same) and 2> the inhuman properties of an entity that never gets tired, annoyed and irritated when faced with the task of endless repetition. Thus, also, the programmed teacher is seen as an useful entity since the roteness of this work can be relegated to a machine, thus freeing the real teacher and her students to engage in purposeful classroom activity.

Without attending to the details of how this programmed (i.e., anthropomorphized) teacher informs us generally about teaching perceptions, this programmed teacher is very different from the human one who, in very different ways, usually *cares* about her students (i.e., is strictly capable of motivational displacement, Noddings, 1984), receiving and channeling her "kids" desire to communicate; seeking ways to nurture, understand, engage and motivate; believing in her "kids". Thus, in instrumental modes of computer use teaching behavior is no longer (and cannot be) programmed; it belongs to the teacher and even sometimes to her students. The reversal of teacher-student roles, for example, occurs in the domain of computer literacy, where children are often far more literate than their teacher. The un-programmed instrumental teacher thus engages in teaching behavior beyond and inclusive of the presentation of subject matter, testing and evaluation. These behaviors include at least three kinds of tasks: management and coordination; supplying access to material, intellectual and affective resources; and scaffolding (Barson, 1991; Applebee and Langer, 1987).

In management and coordination tasks, the teacher initiates a project, steering its general direction and delegating decision-making activity. Thus, for example, the teacher might initiate a newspaper production enterprise; steering the process through the broad stages of data collection, writing, editing and publication while delegating decision-making of the process to student editors and reporters. In supplying material, intellectual and affective resources, the teacher provides and facilitates *access* to these resources. Thus, for example, in a newspaper production activity the teacher might facilitate contacts for interviews with relevant members of the community outside of the classroom context. The teacher might supply a tape recorder and diskettes, as well as samples of authentic foreign language materials such as magazines, newspapers and books. And the



teacher is "there" to encourage the students' steps toward accomplishing the goals they have set for themselves. The teacher is "there", for example, to help with the hurdles of learning how to operate the computer just as she might be "there" when there is a need to briefly "present, test and evaluate" parts of the linguistic system (e.g., to explain grammatical rules and vocabulary). Finally, in scaffolding, there are the teacher's attitudes and beliefs; her style and her way; her sensitivity to situations-at-hand; her understanding of these situations; and her flexibility in working with the many different agendas of learning and action. In sum, perhaps, she even welcomes "chaos", knowing that chaos also has its own order.

Agentive and instrumental modes thus subsume different frameworks of computer use, which in turn create different contexts for language, learning and teaching to arise. These differences run deep, invoking transformative rather than substitutive changes (term is from Spindler and Spindler, 1982). This is to say that when instrumentality is in effect, it is no longer possible to engage in agentive activity in the same way. Thus, for example, the conditional verbal mood in French may be invoked in a simulated dilemma situation where all students are requested to send electronic mail messages stating what their dilemma is and requesting assistance. This computer-mediated practice using an instrumental application will work in an agentive mode as long as there is a willingness to accept the consensus over its pedagogical benefits. At one point, however, the consensus is likely to break down as language use becomes *unleashed*. As one student in that group of dilemma-creators noted: "I have a *real* dilemma. This class uses computers a lot and I don't like them... If you were in my place what would you do?"

Thus, instrumentality subsumes activity (learning, teaching and language use) that has been both *subjectified* and *actualized* to a point of no return (i.e., it is possible, though perhaps unlikely, that the reponse would be, "I would put two 'm's in the word 'dilemma'".)



## **Chapter II**

### **Methods and analyses**

The process of analytic induction probably most accurately describes the investigative method used in each of these case studies (Denzin, 1970). This is to say that, beginning with the construction of a researched hypothesis (e.g., what is the instrumentalization of the computer?), there was constant movement in and out of the research sites to circumscribe the question, to illuminate it, to reformulate it and to grasp some of its parameters and its explosion.

The movement in and out of research sites was realized in structured and systematic research activity (e.g., participant-observations, interviews, the design of questionnaires and the choice of testing materials) each of which, in turn, *fed back* into the process of analytic induction until a coherent understanding of each of the contexts emerged. Finally, once a set of coherent pictures emerged, it was then possible to ask quantitative questions (of the collected data) whose answers might be used to triangulate the results of participant-observations, interviews and questionnaires. Thus, questions of achievement, attitudes, success and failure could be embedded in the identification and description of the process of instrumentalization, with the quantitative and the qualitative perspectives both spiraling together in the articulation of answers.

In sum, the method was one that involved much communication, reflection and systematic observation, as well as a general flexibility required for socio-cultural immersions. This was also a process that took place over nearly a decade, beginning with the literature and hands-on software reviews for a doctoral

dissertation proposal and resulting in the dissertation study itself as well as many papers.

Unlike true ethnographic methods, however, where the most important goal is to understand the context under investigation in an emic way (i.e., from the participant's perspective) with as little interference possible, the method used in three of these case studies may also be considered action research. This is to say that the research resulted in *changes* in the contexts. In the classroom-newspaper production study, for example, the research project created the site. Similarly, in the database of book reviews study the researcher taught the children how to use the computer. And finally, in the Neighborhood Computers Center study, the research was commissioned as a formative evaluation of the project. Thus, the method used for these studies was both inclusive of and beyond the scope of ethnography.

Finally, as writing tends to include a process of discovery, this process is also embedded in the case studies reported here (e.g., Murray, 1978). This is to say that, in writing, choices arising in a background are made about *what* to report and a relational *stance* is adopted toward facts (Langer, 1991). In an idealization/realization framework, for example, a forwarding stance may implicitly be adopted and circumvented toward facts, with the idealization functioning as a reference (Bruce and Rubin, 1992). This is different from the construction of an *enhancing* relational stance toward facts where enhancing is an *ethical* choice rather than a romantic one (Noddings, 1984) and, where the choice of referencing might be located in past experience and the never-realized before. Thus, the studies are "thickened" (term is from Geertz, 1973) with choices and stance movements. Significant aspects of the experiences are brought out and interpreted in a horizon of grateful and careful moves. These interpretations permeate the studies and they are also regrouped in the "Perspective" sections of each of the case studies. These sections thus depart from the case study method in that they present the researcher's interpretive discussion of one selected aspect of the study. These discussions were nonetheless included because they tend to bring out the richness of the material under focus and because they function to differentiate the process of instrumentalization.

Thus, the case studies presented here tend to draw on method(s), rather than *the* method. Similarly, they draw on the results of several different

quantitative and qualitative analyses performed on different types of data (from the observed to the inferential and back to the observed; and from the random to the standardized). As Daly (1973) has audaciously put it, "The servants of Method must therefore unacknowledge its nonexistence... By the grace of this double negative may they bless its existence in the best way they know. High treason merits a double cross" (p.12). And as Dolto (1985) points out, "All human beings are in search of their method... "<sup>3</sup> (p. 361).

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<sup>3</sup> Translated from the French, "Chaque être humain cherche sa méthode..."



### **Chapter III**

#### **Case Studies**

#### **L'Assiette de Crevettes: Classroom-newspaper production**

##### **Overview**

L'Assiette de Crevettes (The Shrimp Plate) is the title of a classroom newspaper produced within the context of a French as a foreign language class at a major private California university. The project, which lasted one quarter, was the first of a series of projects to follow which involved the use of computers to support newspaper production as an activity system in the French language learning and teaching program. It began in 1986.

Thus, during nine weeks, a group of nineteen students enrolled in a first year, third quarter French class embarked in the production of a classroom newspaper using the computer as a tool in the production process. Students were asked to commit to an activity of their choice within the newspaper producing enterprise. Thus, some students visited museum exhibits and wrote review articles. Some students interviewed French speakers from the community, transcribing their interviews in their articles, and one student even organized a wine-tasting experiment involving the whole class, which he then wrote up as an article. Finally, three students also took over the editing roles, ensuring that all the articles were handed in and revised; they handled graphics and the formatting of articles into a newspaper.

As the project unfolded, students were given the option of attending class or of attending the computer center to work on their articles. And as the quarter unfolded, an increasing amount of time and energy was devoted to the newspaper

production endeavor to meet the production deadline. This occurred in and out of class. In class, this meant allocating time for discussing individual articles and such collaborative issues as the title of the newspaper, the layout and format, deadlines and what needed to be done. Outside of the classroom this meant devoting time to research for the articles (e.g., time to visit exhibits, to see movies, to eat at restaurants); time for scheduling, preparing, performing and transcribing interviews; time for writing the articles and circulating them for review, editing and proofing. And finally, it also meant devoting much time (i.e., several nights fueled with pizza) at the computer center to format the articles into one publication that we could all be proud of.

The project worked --with computers designed for the study of advanced computational linguistics located a few miles from the classroom and with the many uncertainties of working from hypotheses and some conjecture rather than previous experience. As one student put it: "The *journal* is something that I intend to keep."

### **Participants**

One professor and 19 students from a variety of academic backgrounds and with varying academic standing participated in this project. Students were enrolled at the university and this class corresponded to a first year, third quarter program of French as a foreign language study. Thus, the students enrolled in this class were advanced beginners of French. This means that their use of French existed. This use of French, however, was slow, hesitant and anglicized. Students enrolled in the class on a voluntary consent basis after placement resulting from examination or previous study of French at the university.

The group was exceptionally outgoing and enthusiastic from the onstart of the project. This means that students were quite willing to lend their unique experience and talent to the newspaper producing enterprise as they were given the opportunity to commit to tasks of their choice. Choice of tasks within the framework of producing a classroom newspaper thus invoked a wide variety of personally meaningful collaborative and individual projects. Thus, for example, a student who organized a wine-tasting experiment for the whole group was professionally engaged in research activity. A student who interviewed another student who had just returned from an overseas program of studies in Paris was



tentatively exploring her own options for the future. And similarly, a student who chose to write about the workings of the judicial system in the anti-apartheid trials on campus did so as a reflection of his own experience in jail during those turbulent times. Finally, the three students who took over the editing of the newspaper were also quite committed as they apportioned the work according to their talents into the three categories of graphic design, computer design and general management.

The professor was very committed to the newspaper producing project as he had been working both with technology and activity-based pedagogy, in particular the use of videos. The newspaper producing project created a learning and teaching context that matched well with his stimulating and eclectic teaching style. And computer use to support the newspaper producing endeavor rather than to determine the study of language use rekindled a world of interesting possibilities. The professor was experienced and dedicated to his work. Further, his teaching style was greatly appreciated by his students. As one student put it, "learning" in his classes occurred almost "by osmosis."

### **Technology**

Six Xerox D-lions workstations designed for the study of advanced computational linguistics were used for this project in addition to two laser printers. Students also had access via these machines and with terminals scattered across the campus to the telecommunications programs of the campus mainframe. Thus, students and their teacher could use these machines to write, edit, revise and format the newspaper and they could also use these machines in terminal mode and any other terminals on campus to send and receive electronic mail.

Use of Xerox D-lion machines in 1986, in contrast to the use of standard personal computers for higher education such as the Mackintosh 512k and IBM PCs of that time, presented the advantages of powerful computing such as virtually unlimited storage; access to virtual keyboards; networked file management programs; advanced graphic and text processing functions; in addition to instant customization capabilities. Thus, for example, a shared-directory was set up on the file-server for the class where copies of all student work could be stored and retrieved for browsing and appending by all members of the group. The machines were also networked with laser printers that provided

print-outs matching the quality of the processing functions. The disadvantage of these machines was their operational complexity for the novice computer user and their distance from the classroom. Booting these machines, for example, was both a lengthy and multi-step process. Proximity, on the other hand, was somewhat offset by the fact that the machines were available for use 24 hours a day.

### **Learning and teaching activity**

Two learning and teaching agendas ran cocurrently during the quarter of French language study that this class corresponded to. These two agendas were 1> the foreign language learning program subsumed by the last eight chapters of the textbook methodology *Découverte et Création* (Jian, Hester and Wade, 1985) that was in use for the first two quarters of French foreign language study; the study of de Saint Exupéry's *Le Petit Prince* (1943) and 2> the newspaper producing activity system. Thus, two broad sets of goals articulated classroom activity: the goal of producing a classroom newspaper and the program goal of covering such major structural components of language study as the future tense, the subjunctive and conditional moods, including the initiation to an authentic literary text.

These goals and the tensions they created in the curriculum, in theory, as well as it was found in practice, tended to be complimentary rather than exclusive. Thus, language use subsumed by the production of the newspaper in many instances naturally invoked the structures that were a part of the methodology. For example, the future tense was invoked as participants were asked to commit to tasks of their choice within the newspaper producing enterprise. Similarly, the subjunctive mood was invoked in classroom discussions when the focus was on updates and planning in the production enterprise. These intersections, however, were made explicit largely as a function of the professor's expertise in highlighting them. This is to say that formal and functional correspondences between the language structures of the textbook methodology and language use in the newspaper producing enterprise arose via the professor's expertise to spontaneously create them rather than in an *à priori* and contrived way. This was achieved as he used language *activation* strategies in contrast to traditional sequential *presentation* strategies.

With two agendas operational to structure learning and teaching tasks, class time (50 minutes, five times a week) was initially, and at the conclusion of

the project, set aside for the newspaper producing enterprise. Initially this was time devoted to commitments, action plans and the discussion of these individual and collaborative tasks. At the conclusion of the quarter this was time devoted to the formatting of the newspaper into a whole and to such issues as finding a title for the newspaper and designing the layout. In addition to this time allocation, students were given the option of attending the class or the computer center to work on their articles. Finally, one of the projects (the wine-tasting experiment) required the cooperation of the whole class. Thus, much flexibility in the conduct of the class was required to accommodate both the unpredictability of student activity and the dual responsibilities of the program and the newspaper.

The tasks that students committed to within the newspaper producing activity system were quite varied. Some students reviewed art exhibits, restaurants, motion pictures and books which they wrote up as articles. Three participants wrote "Dear Abby" letters to each other. Two participants wrote about the passage of Halley's Comet from the point of view of the comet's passengers. Several students interviewed French speaking members of the community. These interviews were then transcribed and commented as articles for the newspaper. Finally, some students shared exceptional personal experiences and, as mentioned above, one student organized a wine-tasting experiment for the whole class. This diversity of activity made the project a lively enterprise with some memorable moments when, for example, the title of the newspaper L'Assiette de Crevettes was found. This occurred within the context of a whole class discussion in a mood of literary appreciation with students debating over the acoustic qualities of the adverb "soigneusement" vs the adverbial phrase "avec soins" for the subtitle of the newspaper: "Une fête de mots chouettes soigneusement préparée par les étudiants de troisième trimestre à S." ("A feast of cool words carefully prepared by the third quarter students at S.") Finally, the whole class experience culminated with a dinner at the Basque Cultural Center of a neighboring city which was also, according to the professor, a peak experience. As he put it, "Students were just floored by the fact that we all quite naturally spoke French."

### **Instrumentalization: Process, product and action**

The instrumentalization of the computer in this context occurred in using the computer to support tasks and actions in the classroom. This use contrasted

with a use of the computer for the study of language objects that have been programmed in the machine. Thus, the process of instrumentalizing the computer began in two ways. First, access to computers designed as word processors and communication networks needed to be secured. Secondly, a suitable language learning and teaching activity needed to be developed to make use of the computer in this mode. Once these two aspects of the process were initiated, a dynamic was created between them. Thus, computer use evolved in ways that had not been predicted in relationship to classroom activity and conversely, possibilities in classroom activity emerged as computer use was integrated in learning and teaching tasks. Computer use, for example, began as an access issue and it evolved into a design one as a shared directory was created to collect copies of all the articles; as the use of French to accomplish tasks posed the issue of working in an English computer environment (i.e. with an English interface and with an English character set) and as operational difficulties became apparent. Conversely, for example, computer use created the possibility for drafts to circulate among members of the group for on-line commenting and it created possibilities for collaborative classroom tasks such as surveys and the writing of a horoscope section.

Newspaper production was chosen as the computer-mediated learning and teaching activity as it presented a complex work structure of its own. In terms of computer use it was hypothesized that all stages of the production process (i.e., article drafting, revision, formatting and layout) could be supported by the computer. In terms of French foreign language learning and teaching, it was expected that the complexity of the work structure could accommodate choice and diversity of participant commitments to action, leading in turn to many varied opportunities for both writing and speaking. The process of instrumentalizing the computer thus subsumed a dialectical process invoking issues of integration and design (i.e., integration of computer use with classroom tasks and actions, and design issues as the technology needed to be tailored to the particular uses to which it was being put).

The product of this instrumentalization was a newspaper that participants were quite proud of despite the fact that it did not really look like one. Underlying this product there were many varied French language experiences. Students had participated in a wine-tasting experiment. They had dinner at a French restaurant.

They had become motion picture critiques, museum visitors, restaurant and book reviewers, event reporters, "Abby" counselors, passengers on Haley's Comet, interviewers, transcribers, editors, computer users and graphic artists. One important question, however, arose from the experience and the product that mirrored it. The question was "Do you really need the computer?" This was a question that many students in the project asked both at the conclusion of the class and periodically during the quarter.

The answer is overwhelmingly yes. Of course, it is possible with glue, scissors, pencils and Xerox machines to make a classroom newspaper. And similarly, it is possible to learn French without computers. What is impossible, however, is to experience French foreign language learning and teaching in a computer-mediated activity system involving the production of a classroom newspaper, without the computer. In other words, without the computer, this would have been another class and a very different experience with its own set of problems and issues arising.

Both language specific difficulties and those experienced in learning and teaching *how* to use computers in an instrumental mode for foreign language learning are at the root of this question. Thus, it would perhaps be more truthful to acknowledge that such a class was a class in computers *and* foreign language learning rather than simply one-using computers for foreign language learning.

In this way both the complexity of the tool and the dual experience of computer use and language learning underlying the newspaper production activity system would be fully credited. This would also throw some light on the larger picture where this class stood as a pilot study in the foreign language program of a major private California university opening possibilities for continued exploration in the instrumentalization of the computer (e.g., newspaper production with students located at geographically distant sites, the acquisition and design of tools specifically for foreign language learning and teaching). Finally, it would also explain how the instrumentalization of the computer tends to characteristically subsume a recursiveness regardless of the language learning context in which it occurs. This recursiveness functions as users appropriate themselves the instrumentality of the tool (i.e., its open-endedness and protean properties) by creating instrumentalities of their own. Thus, instrumentalizing the computer explodes as action with consequences within and beyond its original locus.

### **Perspective: Shifts and adjustments in language use**

Use of the computer to support a newspaper production enterprise within the context a first year French as a foreign language class created shifts and adjustments in language use . These were primarily of two types. First, language use included shifts in the negotiation meanings between action and language. Secondly, language use invoked the use of *franglais* as a mode of communication, particularly at the computer (i.e., language contacts between the use of English and French, Weinreich, 1974; Jacobson, 1990).

Shifts in the negotiation of meanings between language use and action occurred in the classroom dialogue as students were negotiating actions subsumed by newspaper production while drawing on their knowledge of the French language. Thus, for example, during the wine-tasting experiment participants were required to fill out a questionnaire where they ranked the beverages they had tasted. These ratings invoked the use of descriptors (e.g., *pas mal*--not bad; *sucré*, *très sucré* --sweet, very sweet) to justify the ratings. Thus, at one level participants were engaged in an experiment which subsumed the negotiation of actions such as blindly tasting beverages, ranking and qualifying ratings. And, at another level, students were negotiating meanings of the French language to express their experience and preferences. Similarly these shifts also existed in the professor's language use as he employed activation rather than presentation strategies. Thus, for example, during the wine-tasting experiment the professor played a major role in supplying language forms as he modeled the negotiation of action and elicited explanations of the student ratings. (Incidentally, this role had previously included the negotiation of action over the inclusion of non-alcoholic beverages as variables in the experiment). Finally, it is these shifts that tend to highlight the process by which correspondence between language structure and function is often sought.

The use of *franglais* as a mode of communication, in particular at the computer, occurred as students and their professor were using an English interface both to write their articles and to perform computer operations in French. Thus, for example, adjustments were made to the French language as English verbs such as "to click" and "to put" were imported. As these English verbs were imported they were gallicised both at the phonological and morpho-syntactic levels yielding

the French verb "cliquer" (e.g., as in "Cliquez là" --click there) and the nominalization "faites un put," both forms occurring with a French pronunciation. Alternatively, English items from the interface such as "hard copy" and "password" were imported un-adjusted into French where they were ascribed differential gender yielding, for example, "le password" and "une hard copy."

Thus, language use in this context was quite different from the stabilized and stabilizing (i.e., right/wrong, correct/incorrect) forms of language use occurring in agentive computer contexts, for example. Language use was different because it preserved its live force. It was permeated with shifts and adjustments functioning as flexible, dynamic and adaptive *stretches* in communicative performance. With shifts and adjustments to language use, participants were working at their own target language limits (i.e., in their Zones of Proximal Development and in the co-construction of i+1 input). And it is with these subtle and lively shifts in language use that goals were accomplished, tasks and actions performed. Similarly, it is with these dynamic adaptations to both English and French that L'Assiette de Crevettes rolled off the printer and into another college level, French-as-a-foreign language classroom where it was enthusiastically received (i.e., read by all students and discussed from cover to cover).

### **The Computer-is-a-Library: Intensive academic ESL preparation**

#### **Overview**

In this context 83 students from 23 countries around the world were enrolled in the nineteenth year of an intensive Summer English-as-a-Second-Language learning program at a major private California university. This program was designed specifically to prepare foreign graduate students for their future academic studies at major American universities including the site where the program was operating.

The program ran two concurrent intensive sessions of 9 and 6 weeks. This study was focused on the 6 week session. The program offered 25 hours a week of English study encompassing such subjects as spoken usage, listening comprehension and pronunciation, reading, writing, vocabulary and study skills, discussion and oral presentation. Participants also attended weekly lectures delivered by university professors and bi-weekly sessions with academic advisors



from their fields of study. In addition, participants committed to using English as a *lingua franca* during the entire session. And, as they resided on campus they also participated in a series of extra-curricular activities such as shows, picnics and local excursions.

As part of this preparation for academic study in the United States, students attended weekly computer orientations designed to introduce them to the use of computers as "a tool in the academic workplace." These were lecture-demonstrations where the use of mainframe and Apple Mackintosh personal computers was demonstrated. The use of these machines was demonstrated, in particular, as they may be used to support the writing of field specific academic papers and the research subsumed by this activity. Thus, word processing functions were demonstrated as well as on-line library catalogue searching. In addition, all participants were given electronic mail accounts on the campus mainframe to communicate with their computer orientation instructor and with each other.

Computer use and the subsumed instructional process in this context was particularly relevant to the study of instrumentalization as it was specifically linked to the requirement of producing a field-specific academic paper. Thus, while many of the participants in the study were familiar with computers in their differential fields (e.g., computer science, music and engineering), computer orientation within the context of the program was exclusively geared toward supporting the writing process. Perceptions of this function of computer use in academic life both from the perspective of the program participants and administrators; and the integration of this function in student activity thus became the focus in this case.

### **Participants**

84 foreign graduate students from 23 countries around the world participated in the Summer Intensive English as a Second Language Program. Half of the students were pursuing their graduate studies at the university where the program ran and the other half were pursuing their studies at other major universities in the United States. The group was predominantly male. There were 12 females. And about half of the group was single, the other half married.



Six of these students became informants in the study. They were from different countries on different continents (i.e., Japan, Columbia, Morocco, Spain and Tanzania). Two were female and four were male. They had diverse academic specializations (i.e., Public Health, Engineering, Music and Computer Science). Half were continuing their studies at the university where the program ran, the other half were continuing their studies at major East Coast universities of the United States. As they had scored between 80 and 90 on the CELT test and between 50 and 90 on the PACT placements tests, their English proficiency was advanced.

The program was administered by a program director, an assistant program director and 21 instructional staff members. The instructional staff members were of two kinds: the English as a Second Language (ESL) instructors responsible for teaching the subject matter of ESL (e.g. writing, reading and oral comprehension) and the Academic Orientation Advisers (AOs) responsible for advising students in their respective fields of specialization. One ESL instructor and the computer orientation instructor, in particular, became informants in this project. Both were experienced ESL teachers and doctoral students at the university where the program ran.

The ESL teacher was one of 8 writing class instructors. She was interested in meeting the program goals of leading her students through the writing process of their academic paper and in particular she was interested in fostering an awareness of variability in the writing process. Thus, her classes included enthusiastic informal discussion groups as well as focused writing activity. The Computer Orientation instructor was at the foundation of the computer orientation component of the program. His work evolved in conjunction with the writing of a book Working with Computers: Computer Orientation for the Foreign Students, (Barlow, 1987). He believed that the computer was a resource "like the library" and that it could be "used for something, rather than something in itself like a game." He provided weekly lecture-demonstrations and was available at the campus computing sites for help and via electronic mail.

### **Technology**

Use of the mainframe and use of the Mackintosh was demonstrated with a large screen overhead projector in a classroom context. Beyond the lecture

demonstrations, participants had access to terminals for the mainframe in two locations on campus as well as via scattered distribution of terminals on campus. Participants in the program also had access to Mackintosh computers and the software for these machines in the library on a first-come, first-served basis. Thus, most of the participants used the Mackintosh machines in the library to write their papers and the mainframe for communication and catalogue searching. There were some exceptions, however, when participants had had previous professional experience with mainframe computers, for example, in which case they used the mainframe editor to write their papers. Printing for hard copies was accessible in both modes of computer use as printers were networked to the machines.

### **Learning and teaching activity**

Students in the Summer intensive ESL program attended 25 weekly hours of ESL instruction in addition to the weekly computer orientation lecture/demonstrations, lectures given by university professors and bi-weekly sessions with their academic advisers. The ESL classes differed according to teacher styles and in their difficulty so as to accommodate the varying levels of English proficiency. Thus, for example, the writing class that was the focus in this project was a high writing class. It met three times a week for 50 minutes. And during that time students engaged in one of three types of activities: writing in class, whole group discussion and small group textbook related exercises.

The computer orientation lecture-demonstration included many questions from the audience as students were using the machines to write their academic papers. And the presentation of computer use was geared toward the accomplishment of this task.

### **Instrumentalization: Process, product and action**

The instrumentalization of the computer in the intensive ESL academic summer program was circumscribed by the program goal of writing an academic paper. This goal included the requirement that the paper be produced at the computer. Thus, all instructional efforts in computer use were geared toward helping students achieve that goal. The computer, however, was instrumental in ways beyond the "fancy typewriter" as writing process strategies were used to steer students toward the accomplishment of their goals. Process strategies

subsumed such subtasks as the outline, a tentative bibliography, a rough draft, an abstract and the final draft, each of these functioning as assignments with due dates for commenting by the students' writing instructor and Academic Orientation adviser (AO). The computer was thus used for multiple drafting and revisions as each paper evolved toward its final format. In addition, in one case at least, a student paper was sent to a professor off-campus for comment, thus invoking additional changes which were mediated by computer use.

Mainframe access to on-line bibliographic database searching was also operational in the process of writing as students used these functions to find material in their fields of interest and for the topics they had chosen to write about.

Beyond student computer use for writing, research and revision, however, instructional activity was not mediated by the computer. This is to say that both the teacher's comments and those of the AOs were performed face to face in student/teacher conferences and in ink on the student's drafts rather than on disk and, alternatively, via electronic mail. Similarly, collaborative instructional activity between writing instructors and academic advisers pertaining to the academic papers of the students they shared was not mediated by electronic mail. Thus, in sum, the instrumentalization of the computer tended to exclude instructional activity ( it was perceived as an exclusion by some of the staff) while it permeated every aspect of the process of writing an academic paper from the students' perspective.

The products of this instrumentalization were some beautiful, professional looking, academic papers that subsumed many dedicated hours of research, discussion, revision, learning and teaching activity, and computer use. Students were happy with their work and they were equally happy with their orientation to computers. At the conclusion of the program students envisioned continuing usage of the computer in ways that had been imparted and discovered (i.e., for the writing of future papers in their academic careers) and they envisioned instrumentalities of their own (i.e., using the computer for their theses and dissertations, for daily assignments, for personal letter writing, in field-specific ways and the purchase of their own machines). Thus, in a relatively short period of time students had learned how to use the computer to support the process of

writing an academic paper and they had made this instrumentalization theirs by envisioning new and future instrumentalities of their own.

### **Perspective: Metaphor as pedagogical framework**

One aspect of this study sparked my interest. It was the absence of using the computer to teach an English-as-a-Second-Language *object*. This agentive usage was absent from instructional activity and the computer use experience. And it was absent from the students' concerns despite the fact that agentive ESL computer programs were quite bounteous in the pedagogical market, as well as in the ESL pedagogical activity of classrooms, labs and libraries. This absence became further interesting to me because it could be explained in terms of a metaphorical system that functioned both to articulate computer orientation and to give coherence to the experience of computer use. Thus, in this case, a metaphorical system "The computer-is-a-library" complete with both its blindness and its reality-creating potential was operational as pedagogical framework. In Paul Ricoeur's terms "Metaphor [was] not an enigma, it [was] the solution to the enigma" of an absence (Ricoeur, 1979, p.144). And in Lakoff and Johnson's terms this metaphorical system was "alive....," it was what the experience of computer use "lived by" (Lakoff and Johnson, 1980).

The term "computer orientation," reminiscent of the term "library orientation" and in contrast to such terms, for example, as "computer class," "computer lecture" and "computer instruction," acquired its meaning partly in the history of computer use in the program. Thus, computer instruction had evolved over a period of 19 years from a tour of the computer lab conducted by the AOs for students in fields other than the social sciences to its present weekly lecture demonstration format supplemented by on-site consultation. In this way, computer instruction had evolved from being a resource in field-specific activity to subject matter linked to the program-wide goal of writing instruction. Computer use as subject matter, however, also retained its essence of library orientation as this was the structuring metaphor.

As subject matter, computer use covered word processing, database searching and communications via electronic mail. As subject matter structured by "the computer-is-a-library" metaphor, computer use covered both word processing on mainframe computers and word processing on personal computers

(i.e., the Mackintosh). In this way both computing on large public machines ("like large public libraries with ivy growing all over them") and computing on small machines ("like private home libraries") was demonstrated. Thus, what appeared as a redundancy in subject matter (i.e., word processing on two different systems, one of these being notoriously unfriendly) made perfect sense within the metaphorical framework of the computer-is-a-library. Finally, this framework went beyond structuring the contents of the computer orientation curriculum, it *was* library use. Resources such as the Mackintosh computers were located in the library. Software use for these machines was mapped onto the reserve-book check-out system. Printing for hard copies on these machines was available in the library. And terminals for access to database searching could be used in lieu of card catalogue searching in the library.

The computer-is-a-library metaphor also permeated the instructional dialogue, both in written and face to face modes of communication. Thus, metaphorical activity functioned as an instructional strategy to further provide coherence for the experience of computer use.

In written instructional materials, for example, the instructor stated, "Do you fear going to the library? Do librarians frighten you?... In appearance, computers are quite distinct from libraries: they look modern and do not have ivy growing on them. Nevertheless there are similarities between the use of computers and the use of libraries, and since you are familiar with libraries I will play on the similarities."

And when he played on the similarities, the following explanation of operating systems occurred: "When you walk into a library, you find that it is organized in such a way that people can find the books and periodicals they want. Each book is given a number and arranged on the shelves in a particular area [...] Without some organization, finding a particular book would be like looking for a needle in a haystack [...] The computer operating system also provides a general organization or housekeeping for the computer [...] The operating system organizes files (equivalent to books in a library), allowing you to copy, rename, create and delete files. In addition you are also able to use applications. The equivalent of application in the library might be a card catalogue, a photocopier or a typewriter. On the computer, applications include database programs, word processors, spelling checkers, programming languages and games. You may not

even notice an operating system, because like the organization of the library, it is simply there, the background within which you work."

From the students perspective the metaphorical framework of the computer-is-a-library was received. Students reported in the questionnaires that they had experienced using the computer as an invaluable resource in the process of writing (for the multiple drafts that circulated for commenting) and they reported uses they had discovered on their own (personal letter writing in particular).

As all metaphors also carry a blindness in their powerful ways of creating reality, the computer-is-a-library was no exception. The blindness in this case occurred in considerations of patronage. Thus, the computer-is-a-library metaphor included students as novice patrons, while excluding teachers as expert patrons. This blindness thus explained how some of the teachers felt that computer use could have been used to support communication between them and the AOs, as well as for on-line commenting when drafts of student papers were cycling in and out of their offices. (This would have avoided, for example, according to informants contradictory suggestions to lengthen and shorten a paper). As doctoral students and experienced ESL teachers, the staff was computer literate. Thus, in the computer-is-a-library metaphorical system the staff could have been considered expert patrons. The absence of this consideration was the blindness of the system.

Thus, the metaphor of "the computer-is-a-library" created a pedagogical framework functioning both to systematically structure and select the experience of learning and teaching computer use in this case. And, as such, it also explained the absence of the use of computers to teach an ESL language object and any concerns perceived as lack in this usage.

### **A Database of Book Reviews: Computers in the language arts**

#### **Overview**

In this context, a group of 25 third and fourth graders enrolled at a small public alternative elementary school used one computer and one printer to create a database of book reviews during three weeks. It was envisioned that this database could be used on an on-going basis for consultation and appending by all

members of the class as well as by future classes of third and fourth graders. In addition, it was envisioned that perhaps the database could even be loaned to the public library for consultation and appending there too. This project was also inscribed within a broader language arts framework of activity as the children were also creating video book reviews in the television broadcast style of the Reading Rainbow. Thus, in a more immediate way, some children also used the reviews they had entered into the database as script prompts for their video presentations.

To create the database of book reviews, the children read books of their choice during Quiet Book Time (QBT) and worked individually and in pairs at the computer to enter their reviews. Depending on the children's prior experience with the computer, they spent one and several hours at the computer with me on such tasks as turning the computer on and off; creating, retrieving and saving files; drafting, entering, editing, and browsing reviews; loading the printer and printing. As the project unfolded and some of the children became enthusiastic about the project, they became tutors. Thus, five children each assigned to one day a week of tutoring also helped their classmates with these tasks. The teachers distributed guidelines for writing book reviews and they also helped children individually during QBT. Altogether 35 book reviews were entered on a storage disk (our database) using the Bank Street Writer. And some of the children browsed the database appending responses to each others' reviews. Incompatibilities of computer systems and the absence of computer equipment in the children's section of the public library created barriers for the exportation of the database outside of the classroom context. In many ways, however, the project fanned out as it spurred friendly competition with the class of fifth graders; as it generated much enthusiasm for computer use; as the children sought additional console time, sometimes convincing their parents to purchase computers at home; and as they discovered instrumentalities of their own.

### **Participants**

The third and fourth graders enrolled in this class were representative of the ethnic, socio-economic and achievement diversity of the district. They were children between the ages of 8 and 9. There were 11 girls and 14 boys. As a group these children differed from other children in the district mainly because they



were enrolled in a public *alternative* school which means that their parents had, for various reasons, petitioned for their enrollment at this school in contrast to assignment based on home address. Enrollment in this way (i.e., through filing an Optional Enrollment Request --OER form) was then granted on a first come, first served basis providing that the ethnic balance of the school corresponded to the school district's guidelines for racial integration and with a preference given to siblings.

The alternative status of this school that appealed to the parents of these children perhaps resided in the following characteristics. Historically, the school had been founded by an educator who had implemented practices such as open-classrooms where learning occurs across grades with teams of teachers; collaborative school-based projects such as the building and maintenance of a greenhouse for the study of science; increased parent participation; self-paced learning as well as the nurturance of creativity in all areas of activity. In practice, many of these traditions were still alive, nourished by individual teacher styles. In addition, the school currently housed two resident artists from the community for music and graphics arts instruction and efforts were continuously made to integrate the cultures of the major ethnic groups of the city into all areas of school activity. Finally, the school was small (170 children). The project under focus perhaps best encapsulates some the alternative characteristics of this school.

Two experienced elementary school teachers, who had also been a part of the school's foundation, were team-teaching the class.

### **Technology**

One Apple IIE computer, one ImageWriter printer and The Bank Street Writer program were used in this project. Individual and collaborative reviews were saved as files on a diskette (the database). The children could then retrieve, browse and comment on their reviews as well as those of their classmates. And they could make printouts of the reviews. Altogether, 35 reviews were entered.

### **Learning and teaching activity**

For three weeks the children in this project read books and wrote reviews of their books to create a database of reviews with the computer.



The books that the children read were the same in that they had been chosen rather than assigned. The books reviewed, thus, were very different, reflecting each of the children's tastes and reading levels. Some of the books were adult non-fiction (e.g., The Guinness Book of World Records), some were junior paperback stories (e.g., Charlie and the Chocolate Factory, The Hardy Boys Mystery Stories) and some were large picture books with little text (e.g., Mickey Mouse and the Pet Show).

Use of the computer to write the script-reviews and knowledge that the database was to be circulated and used by other children prompted the reviewers to write reviews where they both addressed their readers directly and disclosed themselves, as well as the whereabouts of the books they had read. Thus, the reviews entered in the database presented a conversational dimension which the children of the project responded to when they browsed the database and appended comments to each others' reviews. This conversational dimension driving the reviewing process also existed as the children wandered around the classroom peering over each other's shoulders when working at the computer to comment on what was appearing on screen. The computer-mediated database project, thus, clearly created a context for expression of the children's desire to communicate with one another about their activity (i.e., their reading).

### **Instrumentalization: Process, product and action**

The process of instrumentalization in this context began with the acquisition of the technology for the school and was followed by a willingness and openness to use the machines in instrumental ways. The acquisition of the technology (i.e., five computers and five printers for each of the classrooms, one additional machine and printer for the music program and a library of software) was achieved through grant-writing to state funded programs. With the exception of the music program, computer instruction was then handled quite separately from classroom activity (literally in the corridors of the school) by parent volunteers. Thus, children signed up for time at the computer. During that time, the children learned computer operations such as turning the machines on and off; handling and booting program disks; and they also learned how to work with many agentive applications such as the Minnesota Educational Computer

Consortium (MECC) programs for mathematics and language arts and the Learning Company's Rabbits.

Over time, the computers moved back into the classrooms where, depending each teachers' way of integrating them, they were used in both agentive and instrumental modes (e.g., as learning centers children rotated through; as tools in weekly tribal news reports; to make banners, flyers and posters for the school; to write book reviews; to play games and for drill and practice types of activities). By that time also, the school had moved to another site (with its own building) and grown in number.

Use of the computer in an instrumental mode in the third/fourth grade classroom under study "fit right in." The project of creating a database of book reviews as part of a larger Language Arts project involving the creation of video book reviews even provided a dual framework for computer use. First, computer use was necessary to create the database and its subsequent use by other classes and possible loan to the public library. Secondly, computer use to write book reviews supplied each child with scripts for video book reviewing in the television broadcast style of the Reading Rainbow. Thus, computer use became relevant in a broader context of activity.

On a smaller scale, learning to work the computer and the Bank Street Writer became paramount as the work of creating the database (i.e., writing the reviews on-line, alternatively entering a pencil and paper draft; revising the reviews; saving, printing and retrieving) could not be achieved without learning how to operate both the computer and the program. Thus, from the children's perspective the experience of computer use clearly departed from game-playing and agentive activity such as mathematics, spelling and vocabulary requiring clozing-type tasks at various levels.

Conversely, the activity of book reviewing departed from its traditional format as the reviews also acquired function in the broader dual language arts goals of creating a database and a video show. Thus, the reviews were to be read, commented upon *and* presented to a wider audience rather than exclusively appreciated by their teachers and left to crumple in a backpack.

One of the products of this instrumentalization was the database of book reviews (see Appendix-a for sample reviews). Underlying the database there was an experience that both captured the strength of the child's desire to communicate

and the efforts that had been deployed to learn the operations of computer use. Thus, 35 reviews had been entered prompting 14 out of 22 children to respond to the question "What did you learn?" with statements about computer use (e.g., "how to do the computer," "how to use the space bar). The significance of these responses was seen, in contrast to the absence of possible statements about the books they had read, writing, and the larger goals of the language activity as well as a few occurring statements about the socializing experience (e.g., "to help other people").

Action beyond the origin and locus of activity was partially unrealized as the database did not circulate to the public library. The database, however, was available for future classes of third and fourth graders to browse. And in a friendly spirit of competition *this* class of third/fourth graders were engaging in computer tasks similar to their fifth grade peers. Thus, computer use in an instrumental mode (i.e., for word processing and database creation) was both received and perceived as a more complex form of computer use than agentive manipulations. Huddling closer with their attention perked and sometimes a shadow of tension, just selecting the Bank Street Writer diskettes from the stack of software was already action loaded with serious anticipatory interest.

### **Perspective: Interdependent literacies**

Perceptions of the experience of creating the database of book reviews as one that subsumed learning how to use the computer points to what constitutes computer literacy in an instrumental mode and to the interdependency of this literacy with language arts literacies (i.e., literacies in writing and reading. Selfe, 1991).

Computer literacy in an instrumental mode in this context subsumed learning and teaching tasks that were called in essentially by two aspects of computer use: the keyboard and the language of the interface (i.e., the menus, prompts and instructions appearing on screen). Use of the keyboard thus subsumed two types of computer operations: learning how to find keys for typing text and learning how to use computer function keys such as the delete, escape, apple-control-reset keys to manipulate text and to work the program. Similarly, using the language of the interface subsumed such operations as finding and focusing on relevant screen information to navigate both hidden and displayed

aspects of the interface, and learning to decipher and understand the meanings of the words and sentences of the interface. The many learning and teaching cycles that each of these operations invoked thus created the experience of "doing the computer" while mastery of these operations constitutes instrumental computer literacy (i.e., a literacy different in nature and function from programming, the typing arts and the study of broad socio-economic dimensions of computer use).

Instrumental computer literacy in this context was characterized by its relationships to the tasks and actions subsumed by the broader goals of creating the database of book reviews (e.g., drafting on-line, entering text, revising text, browsing and commenting on reviews) rather than as a separate keyboarding class for example. An analogy to the novice car driver borrowed from Soviet Activity Theory introduces the idea of relationship and interdependency (Leont'ev, 1981). The novice car driver first has to think about such driving operations as shifting gears. Over time and with practice these operations become automatic in such a way that the driver is only focusing on the goal of getting some place. Thus, with time and by definition, the energy deployed at a lower level (i.e., the operational level of shifting gears) disappears and all efforts are deployed at higher levels (e.g., choosing a route for getting some place). Interdependency of activity thus exists as access to higher levels. It relies on mastery of the lower levels, while the mastery of lower levels acquires meaning and function at higher levels (with notions of pre- and post-cedence implied in the terms "higher" and "lower" rather than notions of value).

In a similar way novice computer users, such as these children, deployed much energy to find keys on the keyboard. This activity may have been compounded in difficulty by issues of friendliness such as the fact that the keyboard "i" in the eyes of these children looked like an "L." A difficulty which resulted in confusion over the "i" and the "L" and, alternatively perhaps, an insensitively imposed inability to find a keyboard "i." Nonetheless, the children were slowed in their goals of drafting and entering reviews by the activity of looking for and finding keys on the keyboard (i.e., hunting and pecking for keys). Once the texts were entered, however, a new set of goals emerged with other cycles of activity at the operational level. Thus, to read and change their texts the children had to learn how to use computer function keys such as the arrow keys to scroll up and down their texts and the delete key to make corrections. Mastery of

these operations, in turn, enabled the children to read and revise their own texts and those of their peers.

Similarly, the language of the interface invoked activity such as learning to decipher its words (e.g., the words "character" and "cursor") and the meaning of telegraphic instructions (e.g., "NO DATE SET. ENTER DATE. ENTER DATE IN FORM 5/5/55). Once these reading comprehension operations were overcome, however, reviews could be saved, retrieved and printed. Thus, operations of computer use invoked reading and writing activity of their own which were *related* to the broader language arts goals in a meaningful and purposeful way. Reading the above instruction ("NO DATE SET. ENTER DATE..."), for example, was not difficult for these 8 and 9 year olds; it was understanding what they were supposed to do that was problematic. Thus, once the children understood that they were supposed to type the date using 5/55/55 as a model, they could move on to saving their work on disk, as a step toward actually making the database.

Thus also, small motor coordination activity (e.g., pressing the shift key in simultaneous succession with the letter to be capitalized), eye-hand motor coordination (e.g., to position the cursor) and toggling in and out of edit menus both occurring at lower levels of operational activity are related functionally to the broader language arts goals as they *enable* the learner to perform at higher levels. With these operations, for example, successful shifting functioned to enable the learner to make capital letters at the beginning of each paragraph and successful positioning of the cursor enabled the learner to change text and make corrections while toggling in and out of edit menus enabled the learners to access each other's work.

Thus, there is an interdependency of literacies at work when the computer is used as a new mediational tool in a language arts activity such as book reviewing. One of the important differences between writing and reading literacies invoked by computer use and those invoked by print, however, lies in the presence of kinetic surprise (in contrast perhaps to the intellectual surprises of plot and print action). Thus, writing and reading activity invoked by computer use quickly lead to observable playfulness and pleasure. For example, once these children had mastered the use of the delete key, they enjoyed using it and watching all the characters of their text disappear. In fact, they thought little of extensive re-writes when in control of the delete key and the gobbled strings of

characters. Similarly, once they learned how to use the arrow keys, they enjoyed zooming up and down files watching their texts unfold and disappear. Finally, once past the hurdles of learning how to navigate the interface, there was a curiosity and eagerness to uncover (i.e., bring to screen) the hidden contents of the menus and the files containing reviews. Thus, once the arduous tasks of cycling at lower levels of activity were overcome, there was fun. A "*lively* stylus" in Daiute's terms (1983) was being discovered; indeed, a "*felicitous* tool" in the terms of Cochran-Smith, Kahn and Paris (1990).

Finally, it was this fun, at work with other literacies, that was accompanied by the emergence of a gracefulness in movement at and around the machine: fidgety, nail-biting behavior replaced by virtuosity gestures; slouched postures replaced by erect ones; one-finger hunting and pecking at the keyboard replaced by two-hand stretches; three, four and five hand keyboard duets replaced by restrained patience; disruptive prowlers replaced by silent stalkers; noisy, giggly starts and jumps replaced by quiet and focused attention.

### **Desktop publishing: The Neighborhood Computer Centers**

#### **Overview**

In this context computer use existed in an after-school program designed for low-income, minority elementary school children from marginalized urban neighborhoods. Thus, nine groups of third through fifth graders were given two hours of access a week to the idle computers of a local non-profit community-based organization and to those of a local public elementary school computer lab. In this context the children used computers to write a book of their language experiences at the Neighborhood Computer Centers (NCCs). The children used a children's desktop publishing program (The Learning Company's Children Writing and Publishing Center) to write about their NCC language experiences. These experiences were varied. In the core literacy classes the language experiences children engaged in subsumed such tasks as interviewing classmates; collecting garbage in the neighborhood; listening to professional community members invited to class as guest speakers; visiting a local museum or television broadcasting station; seasonal activity such as trick and treating for Halloween and making dodecahedrons. In the science and cultural journalism classes

designed for the children who continued attending the program, language experiences subsumed hands-on science projects such as making a battery, a burglar alarm and a light bulb; and doing journalism such as research through interviewing. Following these experiences, time was devoted to whole group discussion with the teachers providing core vocabulary words and time for writing about these experiences at the computer. Work produced at the computer was subsequently printed in hard copy format to be inserted in each of the children's books.

With differences across each of the Neighborhood Computer Center sites, this project was inscribed in an effort to create school-community partnerships where under-privileged elementary school children would be offered increased access to computers and consequently exposure to an enriched educational environment. The role of the computer in creating such an environment and the kinds of learning experiences generated in this context constitute the focus in this case.

### **Participants**

The 92 children enrolled in this program were recruited at public elementary school sites with high-minority, low-income and high Limited English Proficiency/Non English Proficient (LEP/NEP) profiles. These were children in grades three through five with a few exceptions made for siblings in lower grades. Thus, these children were mostly between the ages of 8 and 10. These were also minority children (mainly Asian), many of whom were not proficient in English and who were from disadvantaged socio-economic backgrounds.

One experienced head-teacher, two teachers and three teaching assistants staffed the program in one city. Five volunteers staffed the program in another city. Volunteer staff were college students and professionals from the community. The program was administered by a program director and in its initial planning stages also by a small group of advisers from the school district.

### **Technology**

Three different computer laboratory sites were used for the Neighborhood Computer Centers (NCCs). Two of these sites were located at the non-profit community-based organizing agency and one site was located in the computer



laboratories of one large public elementary school. These different sites shared one characteristic. They contained idle machines after school hours. Otherwise they differed in terms of the kinds of machines available for use (IBM PCs and Apple IIEs); in terms of the kinds of programs accessible for use (for children and for adult professional training) and in terms of the configurations they offered for seating and movement. Thus, at the agency sites, networked IBM PCs were available for use and The Learning Company's Children's Writing and Publishing Center program was purchased and installed for use in support of the children's writing tasks. At the school labs, networked Apple IIEs were available for use and Sunburst's Magic Slate was used in support of writing. The agency computers were color; the school computers were black and white.

### **Learning and teaching activity**

The children in this project attended one of nine Neighborhood Computer Centers (NCCs) for two hours a week. With the exception of one of the NCCs which ran on Saturday mornings for two consecutive hours, the program ran after-school hours, for one hour two days a week. Basic literacy classes were offered for the children first attending the NCCs; cultural journalism and science classes were offered for the graduates of the first year NCC classes. In these different classes all the children engaged in three types activities: a language experience such as hands-on science projects and collecting garbage in the neighborhood; whole group discussion of the experience; and writing at the computer about this experience to make the entries for their books.

The classes were small (10 students) and each child had access to their own computer. The classes were conducted in English with some second language usage as the teachers, teaching assistants and volunteers spoke some of the children's native languages. The atmosphere was generally high-energy as the children were very enthusiastic about using computers, about their language experiences at the Centers and the friendships they developed.



### **Instrumentalization: Process, product and action**

The instrumentalization of the computer in this context was most clearly apparent in its relationship both to curriculum development and the children's learning experience.

The NCCs used a children's desktop publishing program that did not supply a learning content to be manipulated, complete with learning objectives and ways of evaluating performance. This absence of an objectified and built-in curriculum typically found in agentive applications created a vacuum. Thus, much of the staff's efforts were geared toward creating a curriculum that would supply a rich educational experience for the children to engage in and write about. Thus, there was much care and thoughtfulness directed toward the organization of each session as a unique experience for the NCC children. In turn, it was also this aspect of the program that was most appreciated by the staff, as it gave teachers and volunteers an opportunity to try out innovative ideas and in some cases an outlet for the spirit of "giving back something to the community." Finally, it was also this aspect of the program --active curriculum development that gave the NCCs an identity of its own.

Thus, the instrumentalization of the computer invoked the design of educational experience. The design of this experience was fueled by a great deal of enthusiasm and a concern for offering opportunities that these children would otherwise likely not encounter. This concern, in turn, completed in both the parents' and the children's expression of their faith in education as a path toward social advancement. Finally, in the design of this educational experience there was a move away from all forms of basic second language instruction such as grammar, spelling, rhetoric and pronunciation. This departure from basic language instruction resulted partly as it was assumed that these areas of educational experience were offered in the school setting that each of the children attended each day, and partly out of conviction that these aspects of the educational experience would be invoked (and consequently addressed) purposefully in the holistic experiences that were designed for each of the NCC sessions.

These assumptions, operational in the design of the NCC educational experience, turned out to be true. At school, the NCC children, both in their classrooms and at the computer, were working with objective language uses. And after school, at the NCCs, these aspects of language use were clear indicators in

the children's writing of the kinds of difficulties they were experiencing with the English language. Thus, the children's writing at the NCCs exhibited many deficiencies in English (i.e., spelling, punctuation, sentence construction and even errors making meanings sometimes unclear). Prior and beyond these errors, however, the writing performed at the computer, at the NCCs, was an exercise in written self-expression, reflection, astute and careful observation, imagination and critical thinking in which the process of learning English as a second language was clearly, albeit still quite awkwardly, embedded.

Thus, the products of this instrumentalization were the children's books (see Appendix-b for sample book entries) reflecting the children's varied learning experiences at the NCCs; their steps in the acquisition of English and their acquisition of instrumental computer literacy. To a certain extent also, from the staff's perspective, the product of this instrumentalization was an NCC blueprint curriculum complete with lesson plans, objectives and a commissioned outside evaluation.

### **Perspective: The computer tool and social context**

From the children's perspective the computer was both tool and social context for learning. As a tool the children learned how to use it. They learned how to call in their program from the hard disk and how to use it to write their stories. This meant learning to navigate the interface in a command-driven mode and using the keyboard to type in text. In learning how to call in the program, they learned that the machine contained other programs such as games and a paint program that, on special occasions, they would be allowed to play and experiment with. As they used the program to write their stories the children particularly enjoyed working with the graphics database of the program to illustrate their stories. Thus, they flipped through graphic files tirelessly until they found one they wanted to select and insert in their texts, sometimes even creating files containing only graphics which they captioned with titles (e.g., clown, fairy). The stories were also written in an array of fonts of different sizes and styles from the "gothic" to the "high tech," bold and shadowed. As the children wrote their stories on-line they were also very literate in their use of editing functions and cursor movement. They wrote, backspaced, re-read and changed their texts. They talked with their friends, teachers and teaching assistants, writing and re-reading text,

inserting and deleting portions. These manipulations were performed swiftly and gracefully indicating the children's mastery of the tools they were using. Thus, the NCC children learned how to use a desktop publishing program containing a graphics database to create entries for each of their books.

This literacy, however, sometimes excluded use of peripherals. Thus, in some classes printing and saving on diskettes to avoid loading the hard disk was handled by the TAs. This literacy also included little use of the publishing functions of the program. Thus, while it was possible to use the program to make newsletters in a two-column format, for example, this function was seldomly used. Similarly, the activity of book writing was structured in such a way that the books were not really intended to be read by anyone other than the teachers, their individual authors and the fundraising agencies. Thus, both the recursiveness of the writing process and the tasks of putting many pieces of writing into a whole were un-mediated by the computer.

This, under-utilization of computer function had little immediate impact on the success of the NCCs; the enthusiasm that was generated and maintained for learning and writing at the computer; the functioning computer literacy in desktop publishing that was developed; and the exclusiveness of the experience offered in contrast with that of the school sites. It did, however, point to what has been referred to as levels of implementation (Michaels, 1990) and the idealization/realization disjunction operational in contexts of computer use (Rubin and Bruce, 1990). In this case though, it was not the step from "fancy typewriter" to word processing and "more than a typewriter" (Black, 1992) that needed to be made, it was a step from maximum and creative utilization of word processing to desktop publishing that was absent. Similarly, it was in the unrealized use of publishing functions that an idealization subsisted. Thus, for example, the range of computer manipulations would have been further contextualized (e.g., use and functional differentiation of head and body textual functions, use of columnization) leading to increased variation in the acquisition of instrumental computer literacy. And the work structure underlying the use of publishing functions would also have changed to include writing instruction through increased collaboration among the children, their parents, school-site teachers<sup>4</sup>

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<sup>4</sup>School-site teachers varied in their readiness to participate in the program, with some teachers un-interested and frankly negative in their attitudes toward the use of technology and some

and peers, all of which were potential and real audiences for the NCC book collection and series. These perhaps missing steps are to be interpreted, however, as possible openings and horizons for growth and future activity rather than shortcomings of the program, as the shortcoming stance would simply function to undermine the enthusiasm and vital force of a successful project that had begun from scratch (i.e., with the idea of giving underprivileged children access to the idle computers of a non-profit community organization and *no* funding).

The computer from the children's perspective was also a social context for engaging actively *in* and making sense *of* new experiences (i.e., learning), including those whose locus lay in computer manipulation. The NCCs functioned as gateways for access to a varied educational experience at the expense perhaps of a fully exploited and diversified computer experience (e.g., one that might have included programming with LOGO and the many other functional uses of computers in education that the children knew existed (using The PrintShop to make greeting cards, for example). This is to say that behind the name of the program --the Neighborhood Computer Centers-- there was both more *and* less of what one might expect without too many assumptions.

The NCCs provided a context both for learning across the curriculum and for learning English-as-a-Second-Language. Across the curriculum, the children engaged in science and cultural journalism projects where they made artifacts that they could keep (e.g., a burglar alarm) and they used new ones (e.g., IBM computers and a camera). Across the curriculum, they also met with professionals from the community who shared their work experience thus providing windows both into the realities of their communities (e.g., crime and homelessness) and the careers of a variety of social workers, artists and entrepreneurs (e.g., a dollmaker, a photographer, a lion dancer, police officers). Across the curriculum the children were taken to plays, restaurants, museums, local television stations and to collect garbage in the neighborhood; all of this with maximum educational mileage in the form of preparations that sustained and generated enthusiastic anticipation, classroom discussions and written reports.

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teachers with such overwhelmingly tight schedules that any additional investment of energy was just impossible. All teachers, however, shared a genuine desire to help their kids in any way possible and were thus quite receptive to the idea of reading the children's work during class and even making room for the book collections in their classrooms and school libraries.

Finally, the NCCs also provided a context for the acquisition of English-as-a-Second-Language which all of the children with few exceptions struggled with. This occurred in group discussions where the experiences were mediated in English; as the children used English to write about these experiences; and as new friendships were forged. Thus, at the computer and at the NCCs, children who had not socialized with each other at their school sites became friends.

Conversely, boy vs girl rivalries emerged in the classroom. For example, one of the NCC children wrote in a session evaluation: "I like the NCC after-school program because I could know more friends there... One of the things that I hated in this class are those girls because they always hate boys and never talk to us so that I hate them too." Thus also, over time, each of the children's work could be analyzed both quantitatively and qualitatively for various indicators of target language growth such as increases in the number of words; the number and length of Terminal Units (Hunt, 1977) and the frequency of Error-Free Terminal Units (Larsen-Freeman, 1978). Although these indicators of growth could not have been attributed to the effect of the program alone, which ran after school for each child and for two hours every week, both the struggle experienced and the progress that the children were making with English as a second language could be measured in the work that was being done at the NCCs.

The NCCs thus achieved their goal of increasing computer access and via this increased access creating opportunities for an enriched educational experience. Further, the NCCs offered increased access to computers which subsumed an experience that was quite different from the agentive one that the children were experiencing to various degrees at each of their school sites. The NCCs, however, had room to grow both in maturity and diversification of the computer experience. The program was in its second year of operation, with administrators working diligently to establish a secure funding base. Thus, the available resources and the learning/teaching activities these resources could support were just being discovered. Much work also needed to be done to accommodate the children's hunger for computer use in ways they knew (and expressively suggested) would further empower them. Thus, the NCCs was a program in the making with much success to its credit (e.g., a growth rate that had tripled in two years) and a future, in its openness to listen its participants, that would clearly be of service.



## **Chapter IV**

### **Discussion: A discourse of occurrences and recurrences**

In the case studies presented here, a discourse of occurring and recurring patterns of computer use has been articulated. This discourse cycled around the notion of instrumentalization. Arising out of this discourse is the issue of whether and to what degree the identified patterns of computer use can be generalized to other computer-using contexts of language learning and teaching. Thus, it is possible to wonder whether the integration of a newspaper-production activity system into another foreign language classroom would create tensions in the existing curricular framework. And further, whether such tensions would be resolved primarily in language use through the expertise of the teacher. Similarly, it is possible to wonder to what degree the use of desktop publishing in an urban after-school program would transform the process of second language learning into one of enriching educational experience. And it is also possible to wonder whether an introduction to academic computing would necessarily invoke the structuring functions of a library metaphor. Finally, it is possible to wonder whether the use of word processing in a language arts classroom would always create an extra learning and teaching dimension focused on the development of instrumental computer literacy.

The first answer that comes to mind is: Recurrences are unlikely to happen. In principle, we cannot truly predict what will occur in a different context, with different teachers, different students and different technological means. And in effect, as these case studies illustrate, when an instrumental mode of computer use is held constant, very different projects come into being. Finally,

the concept of recurrence would collide with the essential notion that instrumentality is acquired by capturing instrumentality in an open-ended process of insight. Thus, it would be un-reasonable to expect that the patterns of activity identified in each of the case studies be replicated in other contexts.

The second answer that comes to mind is: To what degree do we want recurrences and the reproduction of community practices? And with this answer is the question of theory and practice. This is to say that the case studies presented are thickened examples of how computer use comes into being when language agency belongs to its users, rather than binding and typological descriptions of computer-using contexts. The patterns of integration, use and change identified are thus useful in as much as they can perhaps further inform a larger understanding of computer use and its growth. For example, in the first case study, the issue of whether the computer teaches arose. This was an important pattern because it pointed to the need of both clarifying the role of instrumental computer use in the foreign language learning context and acknowledging the existence of "learning how to use the computer" as a different, yet inter-dependent, activity in that foreign language learning context. Thus, the pattern identified is perhaps useful in as much as it has the potential to bring out some of the attitudes that surrounded instrumental computer use. Similarly, the expectation that it might recur can perhaps also be useful, in as much as the anticipation exists both as an openness to being wrong and an increased awareness that can be transformed into action in the direction, for example, of explicitly clarifying the role of the computer and differentiating this from the process of foreign language learning. Thus, a discourse of occurrences and recurrences *in absolute* matters little, whereas its leverage does. And with this leverage is the difficulty of working through and beyond the binding processes of duplication, cloning and recurrence to embrace growth and change where differences lie.

Embedded in this discourse then, there is perhaps a future and there is the past. How previous experience might inform the future without binding action; and how compelling the occurrences of past experience appear so as to propel future action in a direction that embraces growth. For the process of instrumentalization under study, the experiences presented here have pointed to a series of patterns. Among these there is:



- the use of open-ended technology in contrast to the use of programs that manipulate the language objects of a subject matter;
- the instructional and methodological vacuum that such open-ended applications have the tendency to create;
- the inter-dependency of computer literacy and language learning activity;
- the differential nature of language use arising out of instrumental computer use;
- the gateway function of instrumental computer use to socialization and meaningful, purposeful activity;
- the transformative changes of classroom activity subsumed in usage, at task and role levels;
- the tensions of integration and their polymorphic resolutions;
- the differential nature of productivity subsumed by instrumental and agentive modes of computer use;
- the relationships between computer design and computer use arising out of educational activity;
- and the recursive properties of instrumentality.

These patterns of instrumental computer use, integration and change thus exist as a discourse of occurrences and recurrences with leverage to inform rather than procreate and burden actions beyond the scope of this book. Thus, each of these occurring and recurring patterns of instrumentalization reflect a problematic of their own whose locus lies in the case studies that have been presented. And, through the careful triangulation that supports them, the live experience they circumscribe and the background in which they arise, these patterns of computer use, at least, constitute a de-mythified discourse (term is from Barthes, 1957), that is, one that *has been* levied.



## **Chapter V**

### **Conclusion: Conceptualizing the role of the computer in CALL**

To date, many conceptualizations for the role of the computer in CALL have been proposed. Among these, there are the Magister/Pedagogue (Higgins, 1988); the Felicitous tool (Cochran-Smith, Kahn and Paris, 1990) and the Lively Stylus (Daiute, 1983); the Proteus of Machines (Papert, 1980); the "Partner/Tutee/Adviser" (Ng and Olivier, 1987); the "Stimulus/Knower-of-all-the-right answers/Workhorse" (Jones and Fortescue, 1987); the "independent/dependent" variable (Michaels, 1990); and the "Electronic Quill" (Bruce and Rubin, 1992).

Informed by varying backgrounds and situated praxis, these conceptualizations of the role of the computer in CALL each provide different coherences in the domain of educational computing bringing our attention to the salienties and significance of the experiences. Thus, the present discussion of instrumentality and agentivity, taking into consideration this metacognitive dimension of "thinking about thinking" (Emihovich, 1990), also provides a conceptualization for the role of this seemingly ubiquitous machine. The following is a brief examination of the metacognitive dimension herein.

The conceptualization of the role of the computer presented here has been articulated in notions of language use and their embodiment. This is to say that, underlying the notions of instrumentality and agentivity, there has also been an individual experience aimed at capturing an "I" that I could claim my own (Allender, 1986). Beginning with total depossession and the experience of many imposed "I"s, the process that these notions embody has been one of taking

ownership of an "I." Rather than writing the many "I"s that I have stolen and been penetrated with, however, I used these "I"s (Cixous and Clément, 1991). Thus, these "I"s have been used both in research activity (in particular to take on the perspective of the developing child) and to write the "you": the findings of the research and the focused object of these notions.

In many ways then, the process underlying this conceptualization has been one that was aimed at finding and recapturing a conducting "voice" for the many voices that have populated my experience and observations of computer use. Thus I believe, as James Wertsch (1991) has pointed out, that there may not be any "linguistic Adams" (1993), but I also firmly believe that there is *one* fragile linguistic "Eve" in each human being; a subjective and unifying voice that orchestrates the many voices of the mind, in flights and thefts perhaps, and ultimately perhaps to express the fact that each human being (however small) has a mind (and heart) of her and his own. As Irigaray (1993) puts it (and I would like to transform her needful "we" by extending its inclusiveness), "We are in need of our *subject* , our *substantive* , our *word* , our *predicates* : our elementary sentence, our basic rhythm, our morphological identity, our generic incarnation, our genealogy" (p.71).

Clearly then, this book has purported to offer a conceptualization of the role of the computer in CALL through the expression of its subject --a conceptualization punctuated by different statements and rigorous observations of computer use in varying educational contexts.

**Table I** - Case profiles: Project, context, participants and technology

<b>Project</b>	Newspaper production	Academic paper	Book review database	Book-making
<b>Context</b>	Academic French Foreign lg.	Academic ESL Summer	Elementary First lg.	Elementary ESL After-school
<b>Participants</b>				
Students	19	84	25	92
Teachers	1	21	2	8
<b>Technology</b>				
Hardware	Xerox D-lion Mainframe Printers	Mackintosh Mainframe Printers	Apple IIE Printer	IBM PCs Apple IIEs Printers
Software	System	System <u>MacWrite</u>	<u>BankStreet</u> <u>Writer</u>	<u>Magic Slate</u> <u>Children's</u> <u>Writing and</u> <u>Pub. Center</u>



## Appendix-a - Sample book reviews

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All About Ponds by Jane Rockwall  
Illustrated by Joseph Vero

Hi my name is J. I read a great book all about ponds. I think you will like this book very much if you are interested in how ponds are born. People who like science and nature will enjoy this book. *I like how the author wrote this book as if ponds were people and how it shows the shapes of how ponds grow, die and look older.*

---

To Hell with Dying by Alice Walker  
Reviewed by N

Hi my name is N. Have you ever met a drug user that lived a long time? Well, that is what "To Hell with Dying" is about. The main characters are Mr Sweet, and Alice Walker who wrote the story. This book is an *autobiography* of Alice Walker. Mr Sweet was an alcoholic, diabetic man. Because of this there was a lot of medical emergencies in the family. Every time there was an emergency, Alice knelt down to the bed and leaned on him.

---

Reviewer: A  
Author: Thomas Y. Crowell  
Illustrator: John Burningham  
# of pages: 31  
Type of book: Fantasy

This book is for good jokes. And funny pictures. Would you rather be crushed by a snake, swallowed by a fish, have people feed you, or live with a rabbit in a hutch? This book made me laugh.

What made me laugh was when the bull ran into a super market. The eggs fell on the ground, people were hanging from the light. people were shouting and people were running!

I recommend this book because it makes people laugh.

---

---

If you like history I recommend this book. *The Declaration of Independence by Norman Richards* is a book about justice for America. When the Declaration of Independence was read aloud the crowds went crazy from what they heard. This book is exiting because of how America became the land where everyone was free and equal.

---

The Black Pearl-Scott O'dell

Hi, my name is R. I just read a great book called The Black Pearl. It is about a boy named Ramon. His father was in a crew searching pearls. Ramon wanted to be in the crew. But he knew he had to learn how to dive for pearls in the Vermillion Sea.

One day an indian named Luzon came to his village. Ramon asked Luzon to teach him how to dive for pearls. So the next day Luzon took Ramon to his village to dive for pearls, they had a big adventure. *If you want to find out what happens next, check this book out at the library.*

---

The Orphan and the Doll

By Tracy Friedman

96 pages

This book is all about a girl named Amanda who wakes up one morning and finds a beautiful doll named Henriette. I really like this book because in the end Amanda gets adopted. *So if you like dolls you'll love The Orphan and The Doll.*

---

12KNIGHTSOFROUND

Hi

My name is M and I want to tell you about a book called JOURNEY TO THE PALNETS. I you like planets you will like this book. My favorite part was a picture on page 20 because it has a picture of the moon. But you cannot see the man on it. You and I know there is not on it. It tells about all the palnets in our mikyway. It show closeup of the rings of SATURN. I recommend this book because it shows you beautiful pictures of all the planets in the milway.

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Mick Mouse and the pet show.  
 A tella Tale Book  
 24 pgs  
 This book is about a dog na

-----

Hi my name is E. Mickey Mouse and the Pet Show is  
 a good book, if you like pet show you will like this  
 book.

---

Shells is a good book. *Hi our name is W. and J.* And  
 we wont to tell you about this book. It is a fun book it  
 tells a lot about shells, and out favter

---

The Hardy Boys Collision Course  
 Franklin W. Dixon  
 150 pages

Hi my name is C and I would like to tell *you*  
 about a great book called The Hardy Boys Collision  
 Course. It is about two teenage boys who are  
 detectives. Their friend Scott Laven is a race car  
 driver and his friend Micoy has just gotten into a  
 deadly accident and died. So the Hardy boys Frank  
 and Joe try to figure out how Micoy crashed.

They found out how Micoy crashed.

They found something on the ground by  
 where the crash had happened. It looked like a remote  
 control device. They took it to their friend Fill's  
 House, he was practically a genius and would be able  
 to figure out what it was. While Fill was trying to  
 find out what it was the Hardy boys were questioning  
 people and trying to figure out the case.

*You* need to read the book to find out the  
 rest and if *you* like mysteries *you*ll love the Hardy  
 Boys.

---

---

Guinness Book of World Records

The author of this book is Norris Mc Whirter and Ross Mc Whirter. I think the Guinness Book of World Records is a good book for you if you like to find out things like the tallest man in the world.

If you want to get a good book for a present you should get this one. You can get this particular book at NT school.

-----  
*I am J R. I think that your book is good.*

---

*The Ghost on Saturday Night*  
 by Sid Flieschman

Hi I'm ES, I'd like to tell you about a book called The Ghost on Saturday Night. It's about a little boy named Ollie who wants a horse but the only way to get a horse is to buy a saddle for \$17.95. Read about Ollie's Adventures while trying to get the money. Read through 57 mystery filled pages! If you like crime mysteries this book is for you.

---

Charlie and the Chocolate Factory

By Roald Dahl. 160 pages.

The story is about a little boy named Charlie who lives with his grandparents and his mom and dad. It begins when the whole town receives the Newspaper and it says that Mr. Willy Wonka has hidden five gold tickets. Who ever found the tickets would get a big tour of Mr. Willy Wonka's factory. The children who found the tickets were very spoiled. But Charlie wasn't spoiled at all. In one of the chapters this spoiled little girl named Violet who always loved to chew gum found out that there was a chewing stick turned to blueberry. Then these sort of people called "Oompa Loompas." rolled Violet to the juice room to squeeze the juice out of her.

In a paragraph Mr. Wonka insulted a little girl's mom (That made me really laugh) Veruca is a girl who is the most spoiled child of all. She wanted a squirrel that is trained to crack nuts. Mr. Wonka said that she couldn't have one. So Veruca went into the room and tried to catch a squirrel. Then she fell into a big pile of nuts. They thought her head was a bad nut. So they took her into a machine and she went to get disappeared.

---

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Reviewer: W

Title: Would You Rather.

Author: John Burningham.

Illustrator: John Burningham.

#of pages: 31

What is the book about: A little boy on a trip

Hi my name is W. and, I would y  
want you to read this book because this book is rely neat.  
And I think you will like it this book has a lot of invigers  
this book is so crazy he was inside a fish boll. I like this  
book so I think you would like it too. I like the part whin  
he was rideing the bull. Thourw the supermarket and. I  
like the part whin the rhinoceros sat on he. And O like the  
part whin he ate the frog for \$0.50. And I like the part  
whin his granmather tride to make he eat spider stew.

---

The Haunting of grade Three

By Grace MacCarone illustrated by Kelley Oechsli

Pages 94

Hi, my name is C. and I would like to tell you  
about a book called The Haunting of of Grade Three.

It's about a boy named Adam and he said he  
wants to be a ghost hunter when he grows up. He loves  
Ghostbusters. Adam finds out there's a ghost haunting  
Elwood Elementary grade 3.

I recommend this book to people who like  
myteries because it tells what is exactly happening at the  
moment andit has scary pictures. I don't want to tell you  
the end. You'll just have to find it out for yourself.

I like this story because it is pretty spooky and  
exciting.

---

The Stolen Apples by Sigrid Heuck

26 pages

The tree is green. The fox stole the red apple.  
There is a red house down the street. The dog is eating the  
apples. And the bird is having eggs.

I think that the book is a good book because it  
has cute pictures.

---

---

Here comes the Strikeout

By Leonard Kessler

64 pages

This book is about a boy named Bobby who plays baseball. He strikes out all the time when he is up. His friend Willie helps him batting. Bobby becomes a good batter. If you like baseball then you should read this book I like this book because it could teach kids how to hit a baseball.

---

Scrooge and the Magic Fish

A Walt Disney Beginning Reader

40 pages

This is a Book about a duck named Donald and Scrooge and the Magic Fish. One day Scrooge went out to fish and then Scrooge felt the line move. Scrooge jumped and the fish said, "if you throw me back, I will give you your dearest wish."

What I like about the book is when Scrooge gets the Magic Fish and the Fish says "let me go!".

---

Scat! Scat!

By Sally Francis

Illustrated by Linda K. Powell

16 pages

Hi, I'm J. I'm going to show you my book called Scat!Scat! That's about a small white cat that does not have a home. If you want to find what happens next I think you should read this book.

---

The Great Baseball Championship

by Richard Wenk illustrated by David Gothard

This book is called The Great Baseball Championship. It is about a boy that plays baseball but he can't because he has to deliver newspapers. This book is very interesting because you don't always read from one page to the next. You follow the directions at the bottom of the page. Their is

-----  
I think you should of did a example

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---

Days with Frog and Toad  
Pages 45

This is a book about Toad and frog playing together. On day toad woke up and said boy this house is a mess. And toad went to his bed and put the covers over him, Toad said I'll do it tomorrow. And he also said I will take life easy. He is sort of lazy.

Then frog came to the house. And

---

If you like mysteries you will love The Case of The Double Cross. Written and illustrated by Crosby Bonsall. It all started when Marigold said "Mean mean full of beans, hope you get a hole in your jeans" to private eyes Wizard, Skinny, Tubby and Snitch because girls couldn't be in Wizard's private eye and then they pmade a plan. I hope that you like this book because it's great!

---

Guinness Book of World Records  
Norris McWhirter  
800 pages

Yo my name is J. if you want to know what the tallest building or the fastest car in the world is, just look at the Guinness Book of World Records. It has every world record in it except for silly things. So I think that you very much will like this book. I recommend it for you. For example, do you know what the first coin on earth was?

---

There's no such thing as a Dragon. BY Jack Kent  
23 pages

This story is about a littel boy named billy who woke up and fond a littel Dragon on the end

---

Hi my name is James and this is a good book. This book is aobut a queen and a King. than 1 day the King bought her a present because it is the queen's birth day. And he bought her a ring. If you want to find out what happens next you should read this book.

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**Appendix-b** -Sample book entries

(Entries have been typed in, thus they do not display the original layout with graphics and varying fonts)

---

P F -October 29th, 1991

My Neighborhood

My neighborhood has lots of fog and very cold. It has lots of houses and lots of cars. It has parks and lots of trees. It has a big shopping center called S. It has lots of highways. The place is on a hill. My house is yellow and it has two layers. It has a gate.

The end

---

T C- December 9th, 1991

God's Eye

The God's Eye  
Is called Eye of God  
The Eye of God  
Is so neat  
It could be big  
It could be small  
But I wonder  
How big is GOd?  
Is God small?  
Is God big?  
Well I think  
He/She is big  
Because the story  
Called God, say  
That god are big  
But he/she could  
Be small, too  
And I can make  
An Eye of God  
With sticks and yarn  
Of any color

the end

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F W- January 27th, 1992

What is an American

An American can be president, mayor, government, and other things. An American does not need to be a person, it can be food, clothes, objects, and more. Here are some things that are related to Americans, forks, presidents, governments, citizens, vanilla ice cream, the American flag, and other stuff. There are lots of Americans in America.

---

D L -October 23rd, 1991

Interview

His name is Wei Le . Wei Le, "How old are you?". Wei Le said, "I am nine years old". Wei Le, " Do you have any pets?". Wei Le said, " I have no pets". Wei Le, " do you have a car?". Wei Le said, " we don't have a car but we are going to get one." Wei Le, " What did you have for last night's supper?" Wei Le said, " I had fish, rice and chicken." Wei Le " Are you rich?". Wei Le said, " no I am not rich." Wei Le, "What is your favorite video game?". Wei Le said, " my favorite video game is Battle Toads and Final Fight".

Wei le, "what is favorite t.v. show?" Wei Le said, " my favorite tv show is Voltron." Wei Le, "do you rent a house?" Wei Le said, "yes, I do rent a house." Wei Le, " do you have a cup?". Wei Le said, " yes, I do have a cup". Wei Le, "do you have a computer?". Wei Le said, "I don't have a computer." Wei Le "why do you like Voltron?". Wei Le said, " because five lions can form a robot."

Wei Le, "why do you like final fight?". Wei Le said, "because you could fight." Wei Le, "what is your favorite hobby?". Wei Le said "my favorite hobby is baseball." Wei Le, "who do you like the most in your family?". Wei Le said, " I like my whole family." Wei Le, "do you have a girl friend?". Wei Le said, "no. I don't have a girl friend." Wei Le, "do you like football?". Wei Le said, "yes, I do like football." Wei Le "who is your best friend?". Wei Le said, "I don't know." Wei Le, " do you like to eat apples?". Wei Le said, "I like apples,". Wei Le, "what is your favorite name?". Wei Le said, "my favorite name is Wei Le." Wei Le, " what room in school do you like?". Wei Le said, " It is 13M." Wei Le, "do you like your living room." Wei Le said, "Yes I like my living room."

The end

---

V L -October 22nd, 1991

Today I met a friend called R C. She live in Stone Street #23. She told me her telephone and it is 434-0000. She like to work in school. She introduce me two of her best friends. On Ki and Lily. Her mother works in a sewing factory.. She have one sister and no brothers. Her favorite food is ice cream. Her favorite hobby is dinosaur books. Her favorite T.V. shows is cartoons. Her favorite games is tag. When she grows up she want to be a teacher. Now she is 8 in a half years old. The end

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MI

My autobiography

My name is MI I. I live at 1525 East 33rd street, O C, XXXXX. I am in the fifth grade. My teacher is Mrs. Chow. I came to America about 19 months. My favorite sport is volleyball. I like to eat cheeseburger. My favorite television program is America funniest video. If I can travel the world, I want to travel Vancouver and Toronto. My favorite place .... is Marine World Africa U.S.A. When I grow up I want to be a computer engineer. If not I want to be a typist.

---

JM D

O Museum Trip

I saw Animals. I saw birds, like a roadrunner, a crow, a bald eagle; wood pecker and bears, mountain lion Scorpion red wood trees skunk coyote Snake.

I saw the Animals die and stuffed.

By JM D

---

R C

Today we went to the O Museum. I saw a wood rat build a dam. Also I saw some hare, owl, mice, road runner, birds, lizards, termites, woodpeckers, frogs, mountain lion, and snakes too. Stan buy me things for us. He buy me rocks. I have a very nice time with Stan, Jim, and Elaine.

---

H J W

Today I went to KTVU. I went in lot of studio. They are the control room, the library room, the editing room, and the computer room. Some show come from tape, film, satellite. Editing is taking something out of the show. If somebody says a bad word on the movie, editing will put a good word instead. Sometimes a movie is too long. They have to put some commercials in the middle.

---

MI

Money

I see on the paper money "Banco Central do Brasil". The paper money is made from Brasil. The language is Spainsh. The people likes plants and flowers. The man on the paper money is the president and the leader. I see an Indian on the papermoney. I think the Indians are there because they are important in Brasil. Electricity is important because we need it for television, lights and computers.

---

---

### Litter by I T

Litter is things that people throw away like newspapers, paper cups, old phonebooks, napkins, and paperbags.

People litter because they are too lazy to throw their garbage in the garbage can. Sometimes I do pick up litter, and sometimes I do like to pick up litter because people could make the streets, and the sidewalks more cleaner.

Litter is bad because it could make people sick, it also could make people die.

People pick up the litter and go to recycle it, sometimes people use a garbage truck and take it to the ocean, junkyard, and garbage center.

---

### Photographer by J L

Today Donald came to speak to us. He is a photographer. A photographer is a person who takes pictures. He showed us a yearbook that has pictures in it. There are also pictures in houses, magazines, newspapers, posters, puzzles and slides. He had pictures of women, earthquake, men, food, pots, cars, and computers. You can learn photography in highschool, from books, and friends. People can make money from working as a photographer. They could make \$500 to \$50,000. I have taken some pictures before. I am not interested in photography.

---

### H N HOBBY

My favorite hobby is eating junk food because it taste good. More junk food you eat the health you will be. Remember children eat junk don't eat health food it will make you sick at home and turn you into a girl or a boy.  
THE END.

---

### R C

In Halloween I am going to be a witch. I am going with my mom to Trick or Treat. I have heard my teacher saying about witches, and ghost too. My third sister are going to be a mouse. This my second time to go Trick or Treat.

---

---

K C- October 8th, 1991

#### The Lightbulb

Today we learned how to make a lighbulb, and how to use it. Because when I make the light. I fell like I'm just doing magic. I like to do it.

First we use a paper to fold it and get a battery. One of the teacher teach us how to use it and he give us a light bulb and continued doing until the lightbulb work.

---

C P -November 5th, 1991

#### Burglar Alarm

Today we made a burglar alarm. A burglar alarm is fun to me to make. I brought the burglar alarm home . I tried to see if the burglar alarm is working. Then the burglar alarm became out of control. When I tried to make it work it did not make a sound.

---

T T -October 3, 1991

#### The Red Drop

It's looks like a drop from a the candle. The raindrop is what it's look like. It's look like a kind of softdrink. It's looks like blood, too. The red drop smell like nothing. It's looks like your teardrops. It's red and if you separate it. It would looks like hundreds of little tiny bloods. It's looks like stars.

#### The Green Drops

The green drops look like your green eyes. It's smells like perfumes. I don't know what it's taste like. It's looks like toxics , too.It don't go through the paper. You could make a lot of dots out of the green drops. On the regular papers, the red and green drops leave some colors behind them, when they move. If the red and green dots stick together, they will make a different.

---

S M -October 24th, 1991

#### Flashlight

Today we used a cup, battery, lightbulb, and tape to make a flashlight. I got a pencil to make a hole on top of the cup. Then I put the lightbulb in the hole. I got one battery and the foil and taped them on the bottom of the battery. Next I put the battery in the cup and got the lightbulb to touch the battery. Then I made a hole and got the foil to touch the lightbulb.

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T T -October 8th, 1991

### Battery and Electricity

Today we did an experiment about battery and electricity. We make the lightbulb light by a battery. First we have to cut out the aluminum foil, get out the batteries and the lightbulbs.

We use aluminum to make a wire, because aluminum is a kind of soft metal and electricity go through metal. Now our teacher told us that if we make the lightbulb light we could take it home to play with.

The battery is out now, we just have to make it work. First, we put one end of the aluminum to the negative of the battery. Then, we try to make it work by putting the aluminum wire to the positive. Next it doesn't work, but when I put the wire to the outside metal of the light, it's working.

Our teacher showed us why the light worked. Electricity never go to the other side and come back, it got to go in a circle we call it a circuit. When the circuit was complete we call it complete circuit. The electricity come from the positive, it go to the light's outside metal to the filament, come down the metal clip and come back to the negative of the battery. That is one complete circuit. I was very happy when I make the lightbulb worked and learn new things about electricity.

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### Magnets

Today we learned to make an electrical magnet. We learned how to make a temporary magnet, too. We learned that a permanent magnet stays longer than a temporary magnet.

To make a electric magnet you need a battery, wire, and screw. We put it together and it worked.

It was funny because we used one magnet. We rubbed the paper clip on it. It was fun because it did not work fast.

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### Change

Today we learned about physical change and chemical change. Physical change is when the shape and the sizes is different but the stuff is still the same. That is physical change.

A chemical change is when it is not the same. Everything changes like the color of the paper. That is chemical change.

The experiment we made today was a chemical change because the whole thing changed. We used vinegar which is a kind of water you could drink. We even used baking soda. We put the vinegar in the baking soda and it bubbled. But when you light the candle and put it by the bubbles the fire went away.

The fire went away because when you put the vinegar on the baking soda a wind comes out. Something was in the bubbles to make the fire go out. It was not oxygen, it was carbon dioxide.

-The end-

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A N -October 24th, 1991

Flashlight

Today we got a cup from Mr. J. and a lightbulb and a battery. He told us to make a flashlight by ourself. Then one of the girls made the flashlight.

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Y L -October 22nd, 1991

Magnetic

What are magnetic poles?

Today we learned about magnets. We put two magnets together. A magnet has two poles. One pole is positive. The other pole is negative. When two positive poles touch they repel each other. When two negative poles touch they repel each other.

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Restaurant Review

On October 24th, 1991 my group went to interview a restaurant. The restaurant was called Indonesia.

When we went to the restaurant we went upstairs to find a table. After we found our table a man came with the menus. We looked at it, and decided what we want. For the first order we ordered 4 orange sodas, 1 7-UP, Curry Shrimp with cabbages, one egg, and potatoes. We also or-dered one plate of steamed rice. The man asked what we wanted to order, and we said what we decided. When it came we ate the food.

The second order was Shrimp Crackers, a fish, and a soup. We ate the food and the Shrimp Crackers was delicious. After we ate all the food except the bowl of soup, we ordered 5 plates of Shrimp Crackers.

Last we went downstairs and inteviewed the people who worked there. Lily asked what were their names. Then we took pictures of the people. Last Candice paid the man the money. Then we went back to C.

By: C V

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A L- October 22nd, 1991

Questions for the manager

How long has your restaurant been open?

What is your best dish?

Have a lot of customers come to your restraunt?

Do you have a second restaurant?

Can I see your cooks?

Questions for the cook

What do customers order the most?

What do you like to cook the most?

Do you just cook American food or do you cook other kinds of food.

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V S -January 22nd, 1992

Today we made a dodehedron out of paper. We folded it the same way we did like yesterday, but we took 12 papers this time. The part that I had to fold was boring, but the part that I had to put it together was fun.

When we finished putting it together Mr. J. explained to me what the different parts of the dodehedron are called.

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U S -December 2nd 1991

The Mexican American Culture

The Mexican people celebrate Day of the Dead. It's when people die and they give Lady of Guadalupe flowers because people die. Mexican people eat tostada, burrito, beans, enchilada, and coffee. Mexican people dress in colorful clothes to do dance.  
The end.

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U S -January 15 1992

A New Resolution

I would like to get A+ in everything at school. I would help the animals so they would not get killed. I would make my bed. I would go to school every day.

I would get A+ and go to school so I will be smart. I would like to keep the animals safe. And I like to make my bed. The end.

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H H -November 13th, 1991

Dear: Laurene,

Thanks for telling us that C. House is a place in Chinatown. And thanks for telling us that C. House is a place that shares, helps peoples that has a problem that needs to be solve, and thanks for teaching us how to sing the song about community.

Sincerely,

H H

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T H N- November 20th 1991

About Police Officer

Last Monday, a police officer called Sorhondo came and taught us about police officer he said the police didn't put the kid in the jail, just the bigger than 14 year old the police will put they in jail, but if you kill somebody, and he said if you hear somebody knock at your door you have to ask your mother or your father if they said you can open the door you can open, but they said that people is stranger, so you don't open for the stranger, and if who on your phone said can I have your phone number you have to said can I have your phone number first and what is your name so I can tell my mother or father.  
The end

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Q N -December 18th, 1991

Dear Santa Claus, Can I have a toy and a truck? Then a game boy then a drum then a ball then a computer. Then a toy animals then a Ninja Turtle.

Your Friend,

Q

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C P -January 15th, 1992

New Year's Promises

I want to learn how to read more books because I don't know how to read. Some people talk to me and I will not know what they will be talking about. I want to do my math test good because my mom want me to be good and get good report card. I want to learn how to exercise because I want to be strong. I want to learn more English because many people will think I am stupid. I want to be the teacher because the teacher helps the children to learn English. I want to know how to sing my favorite song. I want to know how to type in computer so I would so fast.

Happy New Year

The end

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SV C- December 2nd, 1991

About Kung Fu

C C said that he studied Martial Arts for 10 year. C C brought four sword and a knife. Mr. c. show us some Fung Fu. C C chop three squash. Corey said "that every color on a lion is somebody favorite color and he said his favorite color is purple. I wish that Mr C C could come back some day.

The end

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SV C- November 25th, 1991

Leo Va and Skyman

Long time ago, there was a boy named Leo Va and he know magic. One day four boys that know magic, joined up with Leo Va and they turn into a team and they fight bad guys. One day, a bad guy came to Leo Va's town and used his magic to blast fire on the stores, houses, farms and the people. Leo Va heard of Skyman who is breaking the house up and Leo told his team to fight Skyman. Leo Va team fight Skyman for three years. One day an ox, bull, lion, and tiger helped Skyman hit Leo Va. Leo Va got mad and said "ma si me li bar a cr c" and Skyman said "Strong broken leg" and a light hit Leo Va, and a wind hit Skyman. They used their magic and Leo Va's magic is powerful than Skyman's Skyman died by a big magicer hand and Leo Va got married.

By SV C

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Boo Hoo and the knight's dead body

Written by: Mrs J. and everyone in the Wednesday class

Once there was a knight. The knight saw a bear and the bear killed the knight. The knight turned into a ghost. The ghost wanted revenge. The ghost was in the house. The ghost was called Boo and his last name was Hoo. Boo Hoo scared a lot of people. Boo Hoo found the knight's dead body. It was all covered with blood. Some people came into the house and Boo Hoo tried to scare them away. When the people went into the room, there was no one there. Boo Hoo went back to the dead body and vanished away with the dead body. The dead body disappeared from Boo Hoo's hands.

The end.

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R C- November 25th, 1991

The Computer Teacher

There was once a lady named E J. She was a really nice teacher and she was smart. She went in the woods looking for a guy because she heard all the good-looking guys went in the woods hunting. So she went in the woods and there was a monkey in front of E and said "Don't go any further or you might get in really bad trouble". But E didn't listen and went on looking for a guy. Then a tiger was in front of her. He was a nice tiger and he said "Don't go any further or you might get hurt " but like always she didn't listen. At last she found her true love.

The end

---

N T -January 15th, 1992

Dear Mrs. E,

I like computer a lot. The best lesson I like is the interview. The least lesson I like is the God eyes. I like having more freetime. I am coming back for the next semester, I like computer because it is fun, I can learn more, and I could meet new friends. I like playing with new friends. And I like you too.

---

N T -November 27th, 1991

Eye of God

My eye of GOd is colorful

My eye of God is beautiful

My eye of God is wonderful

My eye of god is pretty

It has many colors on it

There are green, white, pink, and purple.

Green means great. White means wonderful.

Blue means beautiful. And purple means pretty.

The end

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M L- January 22nd, 1992

My favorite computer lesson

My favorite computer lesson is when the policemen came. I liked it when they came because it was pretty fun and easy to do. The work was easy and I had something to write about because when I do other work I had to think about what I was going to write. I also liked it when they came because I can learn things that are bad and good.

The computer lesson I think is boring is the lesson when the guy Corey came. I thought that lesson was boring because he was teaching things about swords but I wasn't interested in those kinds of things so I thought it was boring. It was also boring because he kind of talked a lot but one thing interesting was when he showed us how easy it was to cut cucumber.

What I would like to have learnt was how to be a better computer player. I wanted to learn how to be a computer player because maybe when I grow up my job might have something to do with computer or typing.

The end!!!!!!!!!!

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T Y- October 28th, 1991

Earthquake

We thought it was the big kid from upstairs made the sound, but it wasn't. We all hurried and duck our head under the table. My teacher stood at the door way.

During the earthquake I was in Chinese School/ The school was called S.T. Mary School. ~I was at the second floor. The ceiling was cracked, and the class moved.

It all started on October 17, 1989. I was seven year old when it happened. I was in second grade. I was in my seat writing in my chinese book.

I feel sad when the traffic light turn off, windows brake, and buildings were falling. I also was mad, because my lamp fell down and my frame fell too.

The end.

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D G October 24th 1991

My Neighborhood

My Neighborhood is kind of rough. I hear gun shots. The house is big and there are four rooms. The houses are dirty on the outside but in the inside it is beautiful.

The end

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A T - October 28th 1991

Our Neighborhood

The traffic make alot of noise every day. At night people yell and scream and I can't sleep. My neighborhood is not dirty and dirty. Also my neighborhood is a nice place. Some people throw their trash away and some people don't. My neighborhood have a alot of tall building such as apartment, hotel and store.  
The end

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J T -October 28th, 1991

My Story about Neighborhood

My Neighborhood have stop signs and have cars and have a house and School and has many children.

like my neighborhood because my neighborhood has every thing and have family and have pizza stores. My friend and I go outside and play together and my three friend play together and have food store.  
The end

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A L -November 14th, 1991

Homeless People

Homeless people are poor people that live on the street; they don't have food, and shelter. If I was President I would give them food, shelter to live in, and money but I would tell them not spend it at one place but to save it. I would tell them that they should probably go back to school and then get a job.

---

V S -November 14th, 1991

Homeless people

They are lots of ways to be homeless or poor. Here is one way to be poor or homeless. If they have any sickness and the parents would not want to catch the sickness then they will be homeless. I would give them money or try to give them a small job. Also I will give them food. If I give them some money then I will tell them not to spend the money on high price food or clothes. In O. 19 people died and 1,000 people's houses got burned. They became homeless.

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### Bibliography

- Allender, J. (1986). Educational research: A personal and social process. Review of Educational Research, 56, 173-193.
- American Psychological Association (1983). Publication Manual of the American Psychological Association. Third Edition. Washington, DC: American Psychological Association.
- Applebee, A.N & J. A. Langer (1983). Instructional Scaffolding: Reading and writing as natural language activities. Language Arts, 60(2), 168-175.
- Barlow, M. (1987). Working with computers. Stanford, CA: Athelstan Publications.
- Barson, J. (1991). The virtual classroom is born: What now? In B. Freed (Ed.) Foreign language acquisition research and the classroom (pp. 365-383). Heath series on foreign language acquisition research and instruction. Lexington, MA: D.C, Heath and Company.
- Barson, J. & Frommer, J. (1989). Stanford-Harvard collaborative computer-mediated, inter-active, writing project. Unpublished manuscript, Stanford University, CA.
- Barthes, R. (1957). Mythologies. Paris, France: Editions du Seuil.
- Black, P. (1992). More than a typewriter. CAELL Journal, 3(2), 2-5.
- Brecht, R.D., Noel, R.C. & Wilkenfeld, J. (1983, Nov.). Computer simulation in the teaching of foreign language and international studies. Paper presented at the ACTFL conference in San Francisco, CA.
- Bruce, B and A. Rubin, (1984). The QUILL writing project for Alaska: Final report (Report #5789). Boston, MA: Bolt, Berenek and Newman.
- (1992). Electronic Quills: A situated evaluation of using computer to teach writing in the classroom. With contributions from Carol Barnhardt and Teachers using QUILL in Alaska. Hillsdale, NJ: Erlbaum.
- Chomsky, N. (1957). Syntactic structures. The Hague: Mouton.
- Cixous, H. and C. Clément. (1991). The newly born woman. Translated by Betsy Wing. Minneapolis, MN: University of Minnesota Press.
- Cochran-Smith, M., Kahn, J. and C.L Paris (1990). Writing with a felicitous tool. Theory into practice, 29(4), 235-245.

- The Copen Family Fund Inc. (1991). Project report. Yorktown Heights, NY: author.
- (1992). E-mail in the Classroom. NetNews, 6 (7), 2. San Francisco, CA: The Institute for Global Communications.
- Cunningsworth, A. and D. Horner (1985). The role of simulations in the development of communication strategies. System, 13 (3), 211-218.
- Daiute, C. (1983). The computer as audience and stylus. College Composition and Communication, 34 (2), 134-145.
- Daly, M. (1973). Beyond God the Father: Toward a philosophy of women's liberation. 1985 Edition. Boston, MA: Beacon Press.
- Denzin, N.K. (1970). The research act: A theoretical introduction to sociological methods (Chapt.9). Chicago, Il: Aldine Publishing Co.
- Dewdney, A. (1992). Turing Test: A computerized therapist for human passes (almost). Scientific American, 226(1), 30-32.
- Dolto, F. (1985). La cause des enfants. Paris, France: Editions Robert Laffont. (Le Livre de Poche, N° 6222).
- Dretske, F. (1985). Machines and the mental. Presidential address delivered before the Eighty-third Annual Meeting of the Western Division of the American Philosophical Association, Chicago, Il.
- Dreyfus, H. (1972). What computers can't do: The limits of artificial intelligence. New York, NY: Harper and Row.
- Dreyfus, H., Dreyfus, S. & Athanasiou, T. (1986). Mind over machine: The power of human intuition and expertise in the era of the computer. New York: Mac Millan-The Free Press.
- Emihovich, C. (1990). Technocentrism revisited: Computer literacy as cultural capital. Theory into Practice, 29(4), 227-234.
- Engeström, Y. (1986). The zone of proximal development as the basic category of educational psychology. The Quaterly Newsletter of the Laboratory of Comparative Human Cognition, 8(1), 23-42.
- Feigenbaum, E. (1963). The simulation of verbal learning behavior. In E.A. Feigenbaum and J. Feldman (Eds.) Computers and thought. New York, NY: McGraw-Hill.
- Fillmore, C.J. (1981). Ideal readers and real readers. Georgetown University Roundtable.

- Garrett, N. (1991). Technology in the service of language learning. The Modern Language Journal, 75, 74-101.
- Geertz, C. (1973). The interpretation of cultures: Selected essays. New York, NY: Basic Books.
- Green, J. (1993). Student attitudes toward communicative and non-communicative activities: Do enjoyment and effectiveness go together. The Modern Language Journal, 77(1), 1-10.
- Griffin, P. and M. Cole. (1984). Current activity for the future: The ZOPED. In B. Rogoff and J. Wertsch (Eds.) Children learning in the zone of proximal development. New directions for child development, 23, 45-63. San Francisco, CA: Jossey-Bass.
- Herrmann, F. (1992). Instrumental and agentive uses of the computer: Their role in learning French as a foreign language. San Francisco, CA: Mellen Research University Press.
- Higgins, J. (1988). Language, learners and computers: Human intelligence and artificial unintelligence. Essex, UK: Longman.
- Higgins, J. & T. Johns (1984). Computers in language learning. London, UK: Collins ELT and Addison Wesley Co-publishers.
- Hunt, K. (1977). Early blooming and late blooming syntactic structures. In C.R. Cooper and L. Odell (Eds.) Evaluating writing: Describing, measuring, judging (pp.91-104). Urban, IL: NCTE.
- Hymes, D. (1972). On communicative competence. In J.P. Pride and J. Holmes (Eds.) Sociolinguistics (pp.269-293). Harmondsworth, G.B.: Penguin Books.
- Hoko, A. (1986). What is the scientific value of comparing automated and human instruction? Educational Technology, February, 16-19.
- ICONS (1992). Project ICONS: University program. University of Maryland, MD: Project ICONS, Department of government and Politics.
- Irigaray, L. (1993). Sexes and genealogies. Translated by Gillian C. Gill. New York, NY: Columbia University Press.
- Jacobson, R. (Ed.). (1990). Codeswitching as a worldwide phenomenon. New York: Peter Lang.

- Jacobson, R. (1993). As instructional technology proliferates, skeptics seek hard evidence of its value. The Chronicle of Higher Education, 39(35), A27-A29.
- Jian, G., Hester, R. and G. Wade (1985). Découverte et Création: Les bases du français moderne. Quatrième édition. Boston, MA: Houghton Mifflin Company.
- Jones, C. and S. Fortescue (1987). Using computers in the language classroom. London, UK: Longman.
- Kearsley, G. (1993). Educational technology: Does it work? Educational Technology Review, Spring/Summer, 34-36)
- KIDS-91 (1991). Children for children: KIDS-91 concept paper. Manuscript, Washington, DC: Advocacy Institute- Nancy Stefanik.
- KIDS-92 (1992). Kids On-line. NetNews, 7(2), 1. San Francisco, CA: The Institute for Global Communications.
- King, A. (1983). Introduction: A new industrial revolution or just another technology. In G. Freidrichs and A. Schaff (Eds.) Micro-electronics and society: A report to the Club of Rome. New York, NY: A Mentor Book
- Kleinmann, H. (1987). The effect of Computer-assisted instruction on ESL reading achievement. The Modern Language Journal, 71, 267-276.
- Krashen, S.D. (1982). Principles and practice in second language acquisition. New York, NY: Pergamon Press.
- Kuhn, Th. (1970). The structure of scientific revolutions. Second edition. Chicago, IL: Chicago University Press.
- Kurshan, B. (1991). Creating the global classroom for the 21st century. Educational Technology, April, 47-50.
- Lakoff, G. and M. Johnson (1980). Metaphors we live by. Chicago, IL: University of Chicago Press.
- Langer, J. & A. Applebee (1986). Reading and writing instruction: Toward a theory of teaching and learning. In E. Rothkof (Ed.) Review of research in Education, 13. Washington DC: AERA.
- Langer, J. (1985). Musings... A sociocognitive view of language learning. Research in the Teaching of English, 19, 325-327.
- (1987). The construction of meaning and the assessment of comprehension: An analysis of reader performance on standardized test items. In R.

- Freedle (Ed.) Cognitive and linguistic analysis of standardized test performance. Hillsdale, NJ: Ablex.
- , (1991). Literary understanding and literature instruction (Report series 2.11). Albany, NY: Center for the Learning and Teaching of literature.
- Larsen-Freeman, D. (1978). An ESL index of development. TESOL Quarterly, 12, 439-448.
- Lave, J. & E. Wenger (1991). Situated learning: Legitimate peripheral participation. New York, NY: Cambridge University Press.
- Leont'ev, A.N. (1981). The problem of activity in psychology. In J. Wertsch (Ed.) The concept of activity in Soviet psychology (pp. 37-69). White Plains: Sharpe.
- Maslow, A. (1968). Toward a psychology of being. 2nd edition. New York, NY: D. Van Nostrand Company.
- Martinelli-Zaun, F. (1993). Bridging classrooms with electronic learning. The computing Teacher, 20(5), 51-53.
- Michaels, S. (1990). The computer as dependent variable. Theory into Practice, 29(4), 146-255.
- Murray, D. (1978). Internal revision: A process of discovery. In Ch. Cooper and L. Odell (Eds.) Research on composing: Points of departure (pp. 85-87). Urbana, Ill: NCTE.
- Murray, D. (1991). Conversation for action: The computer terminal as medium of communication. Amsterdam, Holland: John Benjamins Publishing Company.
- Ng, E. and W.P. Olivier (1987). Computer-assisted language learning: An investigation into some design and implementation issues. System, 15 (1), 1-17.
- Newell, A. & H. Simon (1985). Computer science as empirical inquiry: Symbols and search. In Haugeland, J. (Ed.) Mind design: Philosophy, Psychology and artificial intelligence (3rd ed., pp. 35-66). Cambridge, MA: The MIT Press. (Turing award lecture delivered to the Annual Conference for Computing Machinery. March, 1976, 19, 113-126).
- Noddings, N. (1984). Caring: A feminist approach to ethics and moral education. Berkeley and Los Angeles, CA: University of California Press.

- Papert, S. (1980). Mindstorms: Children, computers, and powerful ideas. New York: Basic Books Inc.
- (1993). The children's machine: Rethinking school in the age of the computer. New York, NY: Basic Books.
- Pea, R. (1989). Educational hypermedia. IRL Research Abstract II. Institute for Research on Learning- IRL. Palo Alto, CA.
- Reissmann, R. (1990). Computing center: An activity for the one computer classroom. The Computing Teacher, 8(1), 8-9.
- Rich, E. (1983). Artificial intelligence. New York, McGraw-Hill, Inc.
- Ricoeur, P. (1979). "The metaphorical process as cognition, imagination and feeling." In S. Sacks (Ed.) On Metaphor (pp.141-157), Chicago, IL: Phoenix book- The University of Chicago Press.
- Robinson, G. (1989). The CLCCS CALL study: Methods, error, feedback, attitudes and achievement. In Wm. Flint Smith (Ed.) Modern Technology in Foreign Language Education: Applications and projects (pp.119-134). The ACFTL Foreign Language Education Series. Lincolnwood (Chicago), IL: The National Textbook Company.
- Rubin, A. & B. Bruce (1990). Alternate realizations of purpose. Theory into Practice, 29, 256-263.
- Saint-Exupéry, de A. (1943). Le petit prince. New York, NY: Harcourt, Brace and Jovanovich.
- Seem, M and J. Kaplan (1987). Bodymind energetics: Toward a dynamic model of health. Rochester, VT: Thorsons Publishers.
- Selfe, C. (1991). Literacy and computers: Complicating our vision of learning and teaching with technology. Paper presented at the Annual Convention of the Modern Language Association, San Francisco, California, 27-30 December, 1991.
- Simon, H.A. (1981). The Sciences of the artificial. Second edition. Cambridge, MA: The MIT Press.
- Sleeman, D. and J. Brown (Eds.) (1982). Intelligent tutoring systems. London, UK: Academic Press.
- Spindler, G. & L. Spindler (1982). Roger Harker and Schoenhausen: From the familiar to the strange and back again. In G. Spindler (Ed.) Doing the



- ethnography of schooling: Educational anthropology in action. New York: Holt, Rinehart and Winston.
- Stevick, E. (1990). Research on what? Some Terminology. The Modern Language Journal, 74, 143-153.
- Terrell, T. (1986). Acquisition in the natural approach: The binding/access framework. The Modern Language Journal, 70, 213-227.
- Thornburg, D. and D. Allen (1991). Marigold's hypercard yearbook. [Software review edited by Sara Armstrong and Judi Mathis]. The Computing Teacher, 18(5), 44-45.
- Underwood, J.L. (1984). Linguistics, computers and the language teacher: A communicative approach. Rowley, MA: Newbury House.
- Vanpatten, B & T. Cadierno (1993). Input processing and second language acquisition: A role for instruction. The Modern Language Journal, 77, 45-57.
- Weizenbaum, J. (1976). Computer power and human reason: From judgment to calculation. New York, NY: W.H. Freeman and Company.
- Wenger, E. (1987). Artificial intelligence and tutoring systems: Computational and cognitive approaches to the communication of knowledge. Los Altos, CA: Morgan Kaufmann Publishers, Inc.
- Weinreich, U. (1974). Languages in contact: Problems and findings. With a preface by André Martinet. Eighth printing. The Hague, Holland and Paris, France: Mouton.
- Wertsch, J. (1991). Voices of the mind: A sociocultural approach to mediated action. Cambridge, MA: Harvard University Press.
- . (1993). Citation. Message sent on the electronic mail discussion, XLCHC. March-April, 1993.
- Winograd, T. (1974). When will computers understand people? Psychology Today, 7(12), 73-79.
- (1984). Computer software for working with language. Scientific American, 251(3), 130-145.
- (December, 1986). A language/action perspective on the design of cooperative work. Proceedings of the Conference on Computer-Supported Cooperative Work (pp. 203-220). Austin, Texas.

----- (April, 1987). Thinking machines. Can there be? Are we? Paper presented at the Human, animals, machines: Boundaries and projections conference on the occasion of the Centennial of Stanford University. Stanford University, CA. April 23-25, 1987.

Winograd, T and F. Flores (1986). Understanding computers and cognition: A new foundation for design. Norwood, NJ : Ablex Publishing Corporation.

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