Classroom-Management-Classroom Survival: One Teacher's Story of Constructing Practice in a Computer-Equipped Foreign Language Classroom

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ABSTRACT *"I volunteered to speak today, because in the midst of all this technological wizardry, I thought we should have a voice from the other side. Not all of us love computers. Not all of us have a natural bent for computers—on the contrary. I get bent out of shape. How can you visualize how they work when they have no moving parts? Why won't they tell you what's wrong when there's a problem? And my pet peeve is that there's no compromise with a computer. It always gets its way. And what I really question is the starry-eyed assumption that technology automatically, by nature of being technology, improves the language course presentation and facilitates language learning."*

The above quote from Leslie Fiero's speech,[1] given at Eastern University's spring 1994 Language Learning and Technology Initiative's (LLTI)[2] Open House, seven months after she began teaching once a week in a computer-equipped classroom, offers a point of view not widely published in the literature on language teaching and technology. The study from which the present article derives set out to investigate the nature of the teaching experience in third-semester university French classes which met once per week in computer-equipped classrooms. Specifically, data collection and analysis concentrated on the beliefs, decision-making processes, attitudes, activities and behaviors of university–level teaching assistants of French 103 as they met once a week in electronic classrooms and three times a week in non-computer-equipped classrooms.[3] For a majority of students who study French at Eastern, French 103 is the third and final course taken to fulfill the

foreign language requirement. At Eastern, a large research-oriented university, graduate teaching assistants (TAs) teach these basic undergraduate language courses. Thus the overarching goal of the study was to understand what happens when computer technology is introduced into a textbook-driven curriculum and how the principal actors in the process (in this case teachers) negotiate and live this experience. For the sake of brevity, this article will concentrate on only one teacher, Leslie, an experienced university teaching assistant (TA) in her mid-thirties and doctoral candidate in French civilization, who found herself caught up in the midst of this innovative curriculum. Qualitative case-study research such as this allows an in-depth analysis of the multifaceted nature of computer initiation and implementation from the perspective of one foreign language TA, and serves to expose ways in which curricular innovations may impact teaching practices.

Leslie's story will be set against a backdrop of literature from computerphobia, computer anxiety, and cultural perspectives of computer initiation. The observations and descriptions of Leslie's classroom challenge the

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literature based on computerphobia which, heretofore, has used questionnaires to determine the reasons for teachers' unwillingness to incorporate technology in their lessons. The pages that follow reveal how Leslie, a self-described "novice with computers," but seasoned instructor of French, with ten years of private school and university-level teaching experience, struggled to understand how to operate the equipment and integrate computerized lessons that corresponded to her personal philosophy of teaching. This study will additionally describe how she defined and made sense of her encounters and interactions with computer technology for teaching languages.

Research which has taken into account the role of the teacher as central to the educational process suggests that it may be fruitless to talk about the potential benefits of innovative programs such as instructional technology without understanding the interpretive frames teachers use to carry out classroom events, their belief systems about the integration of technology, prior experiences with technology, and their conceptions of practice (Cuban 1986; Freeman 1991; Galloway 1991; Kerr 1989).

Theoretical Frameworks and Design of Study

The design of the study reflects both a phenomenological and process orientation and is inspired by the theoretical frameworks of symbolic interactionism and social constructionism. These frameworks permit a focus on the nature of technology integration as it relates to the meaning that teachers ascribed to meeting weekly in computer-equipped classrooms. Interpretation, using the symbolic interactionist's lens, evolves with an understanding of how the individual constructs meaning. Likewise social constructionists see people as molders of their own social world (Gergen 1985, 1986, 1991). Social construction of technology redefines the character of technological innovation as an inherently sociocultural and not simply technical phenomenon. Using these theoretical perspectives as the back-

drop from which to draw interpretations, it was imperative to view the electronic classrooms as manifesting the negotiated nature of multiple socially-constructed realities. Similarly, the computer was viewed not simply as a delivery system but as mediating a complex underlying structure of values, motives, and biases.

In view of the longitudinal and process-oriented nature of the investigation, data were collected over a period of one academic year from August 1993 through May 1994 and intensified during the months of January to May. The preliminary data collection phase allowed the author to gain entry into the research site (TA classrooms), interview potential research participants, and observe classes and training seminars. In the fall, two of Leslie's classes in the computer-equipped classroom were observed, as were ten other computer-equipped lessons. In order to further enhance the data gathered in the classroom, the author was a participant-observer of the teaching assistant meetings, the LLTI meetings and technology training sessions throughout the academic year. Mishler (1986), Siedman (1991), and Spradley (1979) have related the benefit of in-depth interviewing both as a research method in its own right and as a complement to other forms of ethnographic research methods in order to gauge research participants' attitudes and points of view. One group interview was conducted in the fall in which Leslie was a participant in addition to six individual interviews with other TAs and their students. Economy does not permit detail concerning other teachers or classrooms, but their data offer a balance to Leslie's classroom observations as well as other standpoints from which to judge Leslie's experiences and on which to anchor interpretations of very complex phenomena.[4]

In the spring, Leslie's computer-equipped lessons were observed a total of seven times in which notes of class movement, space, and student-student and student-teacher dialogue were recorded. On a more informal basis, Leslie talked with me often, during training seminars, at cafes and restaurants, between

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In the spring, three hour-long, audiotaped interviews were completed with Leslie in the beginning, middle, and end of the spring se-mester. As many qualitative researchers rec-ommend (Glesne and Peshkin 1992; Lincoln and Guba 1985), the author kept a reflective journal to record informal encounters with in-formants, a daily log of research activity, as well as personal reflection and methodologi-cal decisions. In this article, data from both the preliminary data collection phase and the primary data collection phase have been inte-grated.

During data analysis, the interview sessions were transcribed for accurate interpretation of the emergent patterns and themes. In this phase an understanding of the data via sym-bolic interactionist and social constructionist frameworks was developed. The data were placed into categories through analytic induc-tion (Goetz and LeCompte 1984; LeCompte and Preissle 1993). This technique involved scanning the data for categories of phenom-ena and for relationships among these cate-gories. The categories that emerged were compared to the categories derived through the analysis of the interviews and field notes. In both the beginning and final stages of data analysis, printouts allowed me to color code the data as well as put emergent patterns and themes in file folders. In this manner, the pri-mary and secondary data sources were trian-gulated to provide a richer understanding of the participant's attitudes and behavior, as well as the meanings ascribed to the process. Most crucial to establishing credibility in a qualitative study, Leslie read drafts of the man-uscript about her classroom and offered com-ments on the descriptions, interpretations and conclusions. Because her comments were taken into consideration in subsequent revi-sions, we mutually shaped the written product (Lincoln and Guba 1985).[5]

New Beginnings

One of eight TAs in Eastern's French de-partment, Leslie distinguished herself from the beginning by questioning the role of com-puter technology in her classroom. It did not conform to the values she espoused as a lan-guage teacher with a decade of teaching ex-perience: "I see the classroom as a place for discussion, spontaneity, and creativity and in-teraction for teachers and students. And the computer gets in the way of it."

During her work on a Master's degree in French, two years prior to coming to Eastern, Leslie describes her first encounters with word processing:

> Well, I learned how to use Macintosh and IBM WordPerfect at East Coast University. I just went to the computer lab; somebody gave me a disk, and I stuck it in, and the attendants there were very helpful. I just typed along until I ran into a problem, and then I'd ask them, "Do you know how to fix that?" I started with the Macintosh because the guy who gave me the disk said it was the best one for people who know nothing about computers.

Leslie admitted that she had always had many "personality conflicts" with the com-puter:

> I baffled them a lot of times. I don't know. Things would happen. I couldn't get in or I couldn't get out of the system or I printed and things jumped all over the page, that didn't show up on the screen and nobody knew why. I don't know; it was always an adven-ture. It was never going to go absolutely smoothly.

Prior experiences with word processing did not inspire confidence in her ability to use or teach with the computer as she stated in a talk in the spring of 1994 at the Foreign Language Technology Open House for the School of Lib-eral Arts:

> When I arrived at Eastern last summer, I was equally incompetent on the IBM and Macin-tosh. Sure, at East Coast University, I'd learned things like, don't hit the return button at the

end of each line, but I still couldn't number pages or insert footnotes. And it seemed like I always had to submit a note with my term papers, apologizing for some weird phenomenon that had baffled even the computer lab attendants.

In applying a cultural perspective to the problem of introducing novices to computing, Sproull et al. (1984) relate, "Computing is not just something new; it is also something strange. Its spatial and temporal characteristics, controllability, and nature of feedback are unlike those of other technologies" (33). Leslie's apprenticeship to technical interaction was teaching her that as Howard (1994) states, "What appears to be a two-way relationship is, in actuality, completely one-way. Hence, the adult first-time user begins to understand that the computer experience is largely defined by the computer" (43).

Phenomenological studies like Howard's and Sproull et al. which document the adult learner's process of initiation to computers, are the exception in the literature on computer anxiety. Yet their findings correspond, in many ways, with Leslie's own process. Howard found that the experience was frustrating, time-consuming, and demanding for first-time users: "The computer seems to 'take' from the new user. It takes the user's time, energy, pride, and self-assurance" (41). Howard reported, moreover, that adults experience vulnerability and lack of control. Sproull et al. recorded the various steps in the initiation process among college students. They also found a general model of initial socialization composed of "reality shock," "confusion," and "attempts at control" (34-35). The authors liken the initial interaction between a novice and computer to that of encountering an "alien culture" (31).

Computerphobia and Technophobia: Dispelling the Myths

Several quantitative studies have been conducted to explain the phenomenon of "computerphobia" or "computer anxiety" which occurs concurrently with the introduction of technology in both the business world and the educational one (Maurer 1994; Rosen, Sears and Weil 1987; Rosen and Weil 1995; Weil, Rosen and Wugalter 1990). Leslie's experiences recall to a degree aspects of what Rosen and Weil (1990) have defined as "computerphobia" that includes:

> a) anxiety about current or future interactions with computers or computer-related technology; b) negative global attitudes about computers, their operation or their societal impact; and/or c) specific negative cognitions or self-critical internal dialogues during actual computer interaction or when contemplating future interaction. (275)

In a study to determine the origins of computerphobia, Weil et al. (1990) had university students complete two surveys: a 54-item Computer Anxiety Rating Scale to assess the level of anxieties subjects report for various aspects of computerized technology, and a 28-item Computer Thoughts Survey to assess a subject's positive and negative cognitions about computers. The researchers found that "Computerphobics and the Uncomfortable Users had a much stronger negative first computer experience than the control group. This was accompanied by negative feelings about themselves, about technology, and about their own abilities" (367). Additionally, the authors report, "Nearly all (90 percent) of all the Computerphobics' feelings were negative, compared to 75 percent for the Uncomfortable Users" (367). Subjects also completed a questionnaire which had them rate retrospective computer experience. As part of the retrospective assessment, the questionnaire contained affective adjective checklists. The results of the questionnaire revealed that the top three feeling adjectives Computerphobics chose to describe their first computer experience included "frustrated" (68 percent), "nervous" (48 percent) and "overwhelmed" (40 percent); whereas although the Uncomfortable Users felt "frustrated" (30 percent) they also felt "eager" (50 percent) and "excited" (50 percent).

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According to the authors, one myth of modern technology "is that computer experience will eliminate computerphobia. However, studies have indicated that experience alone will not eliminate computerphobia and in many instances will exacerbate the existing problem" (Rosen et al. 1987a cited in Weil et al. 1990, 362). The research of Rosen and Weil assists us in understanding how it was possible for Leslie to view her computer experiences in a negative light, even after having taught with them for two semesters. Her stance two years later (in 1996) reinforces this same view, "Didn't I ever talk of it as bad medicine? I'm glad to be able to put it on a résumé as experience. Just hope to hell that I never have to use it." Her reaction suggests that there is something more to the phenomenon of computerphobia than mere repeated experiences may dispel.

In order to explain, in their words, the reasons for low levels of computer utilization in schools, Rosen and Weil (1995) conducted a study to assess levels of technophobia among educators. They surveyed over 400 elementary and secondary science and humanities school teachers from fifty-four schools in five urban districts. Measurements of technophobia were gauged by questionnaires and comparative analysis. The results indicated that over half of the elementary teachers (52 percent) were technophobic, and slightly under half of the secondary humanities teachers (44 percent) and one-third of the secondary science (35 percent) were technophobic. The following are highlights of the study's major findings:

· Teachers were worried about using and dealing with the actual computer machinery in their school teaching job.
· Teachers were troubled about computer errors and problems with the computer and its operation.
· Teachers felt that computers were difficult to learn and had anxiety about the prospect of taking computer classes.
· Teachers did not feel that computers aided their work process, made them feel competent, or helped them perform their job. (adapted from Rosen and Weil 1995, 26)

Rosen and Weil (1995) conclude that "...teachers are not using computer technology personally or with their students because they lack confidence and feel uncomfortable and even a bit frightened by computers and modern technology" (28). Given the strong effect that teachers have on students' perceptions and behaviors, Rosen and Weil (1995) fear that technophobic teachers may produce a generation of technophobic students. The research on computerphobia and technophobia garnered from questionnaire and survey data, although informative, indicates that we still do not have a complete understanding of the relationship between technology acquisition and implementation. Furthermore, labels such as "computerphobic" or "computer literate" are far too limited to explain or to capture the dynamic of computer-equipped classroom interactions. In light of concern about reasons for the failure to integrate computers into school curricula, the present study adds to the literature in educational technology and reveals a more complex phenomenon than previously documented. In the following section, Leslie encounters a computer-equipped classroom on a weekly basis, deciding whether or not to meet there, planning activities, and calling on her peer teachers to provide technical support.

Course Management-Course Survival

Reality Shock
As a new graduate student at Eastern, Leslie had not expected to be teaching third semester French:

I was happy to teach French 103, because I like teaching the literature part. That's just a nice addition. That way you know that you conduct the classroom in French.... I didn't know about the technology part when they first told me I'd be teaching French 103, because all week long I had been trained, you know for those three orientation days, I had

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been trained to teach French 102. And then when it was all over on Friday, I found out on Monday that I'd be teaching French 103 with a different book, with a different everything.

New TAs like Leslie were unexpectedly assigned without training to French 103 for two reasons. First, veteran TAs had, in some cases requested 101 or 102 instead. Second, all teaching assignments could be modified to accommodate graduate course choices. Still, the 103 assignment left her neither mentally nor pedagogically prepared. She added, "They figured I'd be able to handle it because I'd already taught French 103 elsewhere, to make me feel honored, I guess." While she would have preferred to teach a course she had been trained to teach, as a new teaching assistant, Leslie had not been given nor felt she had a choice.

Training and preparation for integration of the new technologies at Eastern took place from late August to the end of October 1993. Teaching assistants in French, German, and Spanish, assigned to teach third semester language courses, attended six technology training seminars on four Thursday evenings and two Saturday mornings. During the seminars, they were introduced to electronic mail systems and the Internet; word processors and a French composition package *"Assistant Français"* which included a word processor, bilingual dictionary and grammar usage and explanations; proofing tools included in another word processing package "Writing Assistant" which offered spell checks and thesauruses in French, German, and Spanish; a spread sheet program for keeping grades; and "Media System," an authoring program which allowed its users to create multimedia presentations linked to CD-ROM or video disk players.

Leslie interpreted messages she received in teaching assistant meetings and training seminars to mean that the Language Learning and Technology Initiative faculty members, Academic Computing Unit trainers, and computing fellows in foreign language held certain beliefs about the benefits of computer technol-

ogy—namely, that it would inevitably enhance the learning of French, and that it offered a more efficient means to an end. Speed, megabyte storage capacity, immediacy, hypothetical e-mail correspondents from foreign countries—all these messages were used to encourage Leslie and the others to view computers and language teaching in a positive light. But she often drew sharp comparisons between these messages and the realities of her experience: "I would say that I am skeptical of its use in the classroom. I think it can have value, but too often I find its value is assumed, just because it is technology razzmatazz."

In her written evaluation of the training seminars, Leslie commented frankly, "The most helpful session was when we segregated into language groups and tried out the writing program for French 'Assistant Français.' The group was small enough that you could get questions answered and also keep moving along." The most useful handouts, according to Leslie, were ones that led her "step by step" through the choices on the menus so she could later, on her own, repeat the procedures. Leslie continued, "...[T]his was a huge time commitment for us. I did learn something obviously, but would have profited most from shorter, more specific, more concrete sessions in smaller groups." Leslie's ways of learning about the computer spoke to a need for procedures that were methodical, straight forward, and above all practical:

And that's because, not having a computer background, especially with systems and networks and all that stuff, when I walked in I expected to have an application for my class. And so I was, the whole time, for three hours, I was thinking why is somebody teaching me this now? Why am I doing this now? And I think that what they were trying to tell us should have been more focused. For people who love computers they just want to show you all the things they can do, and for somebody who's not that naturally inclined, it's just terribly confusing, because they seem to go off on all these tangents and you're already

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Training organized mainly by faculty and the Academic Computing Unit personnel (who did not themselves teach the 103 courses) resulted in mixed messages, which were replete with the possibilities of technology in the classroom and in course work, but, in Leslie's view, without pedagogical application.

Survival Strategies

Into the "Computer Room"

These are some of the survival tricks I've learned, hints that can be helpful in the classroom and elsewhere in your personal computer life. Don't even pretend to be an expert if you're not. On our first day in here, I usually tell my class that at my house, I don't even have a Mr. Coffee machine—so this will be a great adventure of discovery for all of us. I'm sure this makes some students nervous, but it also puts many at ease. Out of the fifty students I've had this year, I'd say that a good dozen were almost totally uninitiated to computers. Find out which of your students are computer whizzes. Milk them for all they are worth. On computer room day, arrive early and get the instructor who teaches ahead of you to help set things up. Milk him for all he's worth. And always have a nontechnologically-oriented Plan B in case the system crashes. (Excerpt from Leslie's speech at the LLTI Open House)

Leslie managed teaching in the computer-equipped classroom by employing a variety of coping strategies. As she described it: "Mostly I learned by doing something wrong." But she was honest with her students about her limited technical knowledge and ability. She recalled "being thankful" that she had "two very nice classes." One of her students was majoring in computer science, "so I was happy to have him around," Leslie added. She continued, "Otherwise, I just told them about this *"Assistant Français 6"* [which] was supposed

to help them write their compositions and that I was learning how to use it one week before they were, so we were going to learn how to use it together, essentially." The admission of limited knowledge in the area of technology meant that she joined her students in forming a community of learners working to tackle it together.

Another way to cope was to seek peer support. Leslie relied on other teaching assistants, especially those who taught the hours before her to warn her of how the machines had been acting that day. In reaction to Erin, another TA's claim, that "some of the computers have been giving system errors. Leslie began class by telling students, "By the way, save a lot. Save often, because we have a no-win situation where you will lose all your material. It hasn't happened a lot, but save often." In discussing her reliance on other teaching assistants for help, Leslie explained, "I figured that I knew less than most TAs about computers, so that if the previous TA—Todd or Erin, who did know more than I did—had had problems, then I probably would too." Over the course of the year, the environmental reports from her peer teachers proved invaluable to Leslie, who appreciated the warnings so that she would not be caught off guard if the machine, in her words, "acted up" or was "temperamental."

Another tactic for coping was simply not to meet in the computer-equipped classroom. In the fall, if the computers did not complement her lesson plan, she preferred to stay in Campbell where she taught the other three days of the week:

[I]f I didn't have anything to do with the computer, then I figured I might as well just do a class where I know what I'm doing and use the time wisely. And last semester there was nobody in Campbell on the Tuesday that we were in the computer room. I would just tell them every Monday where we were going to be on Tuesday. If we were working on compositions or if we were working on corrections or the couple of times when I had an exercise for them to do where the computer served a

purpose, then we went to the computer room. But on the other Tuesdays, like usually a week before an exam, we didn't go because I needed that day to review. Or just when we were pressed for time and needed that day. Or if I just couldn't think of any way to take advantage of the computers, then I didn't go.

She was unwilling to reshape her teaching style to fit the computer; the computer must be redefined to fit her needs as a teacher:

I don't believe in taking French to the computer lab. I mean I don't think that's what the computer should be in a course. I don't think we should take French to the computer. I think the computer should be brought to French. French is the focal point. So if you are using the language in a way that the computer will make things easier or clearer or faster or something then fine, or more realistic, whatever, then that's great, but my own experience is that especially with students in the classroom who don't know how to use computers at all if you have an exercise that they do on the computer that they could do just as well with pencil and paper, they don't get half as much done.

Leslie also felt that meeting in Simmons resulted in inequitable student participation:

The other thing is that I often have three people at a computer and they can't see well enough. Not everybody gets the chance to use the computers. And they end up being spectators. There is always somebody who ends up being a spectator.

And she related that the magnitude of technological difficulty convinced her to always come to Tuesday's class with a "back-up lesson plan," which created more work. Leslie was not unique in her strategy of "over-planning" as several of the teaching assistants mentioned that they did the same.

The following experience, significantly one of her first experiences in the classroom, illustrates why she may have believed in both

over-planning and that students working with "*Assistant Français*" did not get "half as much done." Hoping to apply the training she had received in September on "*Assistant Français*," she carefully prepared an exercise in "Writing Assistant" with the intention of having students use "*Assistant Français*" to correct errors in underlined sections of a composition she had written. She entered the classroom with one diskette which contained her exercise, opened "Writing Assistant" and projected the paragraph on the screen. She knew I would be observing that day, and since I had been the one who trained the teachers on "*Assistant Français*," she expected I would know how to help her. I took her original diskette with the text present and loaded it one by one into eight student machines and "*Assistant Français*." I explained to Leslie, however, that it would be impossible to have the underlined portions of the text be present in her exercise because underlining was not a built-in feature of "*Assistant Français*." Leslie's exercise was not as efficient or effective, since it was more difficult for the students to pinpoint what corrections to make, and since the targeted corrections were now embedded in the text, rather than highlighted. Nevertheless, the students commenced their work with less than half the period remaining.

If it took a half hour to set up an exercise that in the end could not be presented in the manner she had conceived it, how was Leslie to trust the computer to do work more efficiently? Her present experiences with computers seemed to resemble those of her past, thus she avoided the Simmons classroom if she thought their time could be spent on something more beneficial in Campbell. The evidence shows that Leslie felt she could not always count on the machines to carry out the electronic-oriented lesson plan that she had devised. Furthermore, she received complaints from students about problems encountered outside of class in the computer labs:

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had to retype it again blah, blah, blah. And this other girl asked me if she had to use it, because she tried and lost it. I said naw. I suggest that they write it out and just use the computer as a typewriter. Don't compose at the keyboard, because too many people have lost things, so if you lose something, if you run out of time, if you have trouble printing, you have a composition to show me what you've done. And secondly I expect everyone to try this system. I do not expect everyone to bang their head against the wall.

In her announcement to use it as a "typewriter," one of the tacit messages communicated to her students was that the computer was too complex (and undependable) to be trusted. The irony is that it is its very complexity that is presumed to have the capacity to improve upon the quality of the students' work. Leslie needed to make amends for the computer's disruptive behavior in student lives. In effect her peace offering—since she may have felt she had subjected them to irritating, if not traumatic, computer experiences—was in the form of lowering expectations of the work completed by the computer, but as she emphasized, "not in the quality of written work expected from the students." Yet for students who had success with the writing programs she added:

[T]hey make the corrections and then give me a clean copy and hand it in and then I give them another grade for corrections. And it's really nice the second time around to be able to concentrate on what they're saying rather than how they're saying it, because it's clean, because so much of it has been fixed, so that is nice.

Given the various levels of computer experience her students exhibited and given the technical demands that were added to the already present linguistic ones, Leslie remained unsure of the merits of "*Assistant Français*" yet she very much appreciated "*Leçons d'Afrique*," an interactive computerized reading program developed at the university. This program contained an excerpt of a well-known African text with extensive lexical glosses in French and English, grammatical explanations, cultural notes, picture files, an explanation of relationships between characters as wells as a digitized audio recording of the text by a Francophone African. According to Leslie, one benefit of the program was that students could "associate the sounds with the looks of the word." And she valued the African accent and graphics: "I think it's nice they have a picture of those African objects that are named in the story." However, one day mid-fall semester, she ushered me to her cubicle to show me how some of her students had interpreted the computerized text. She handed me copies of student summaries of "*Leçons d'Afrique*" following their time spent reading it on-line. Even with all of the on-line aids, the students showed a lack of cultural sensitivity that greatly dismayed Leslie. One student wrote: "Overall, this was a very entertaining story which also exposed me to the backwardness of African cultures." Another wrote:

My first reaction to the whole story was how British settlers first came to North America and treated the Native American Indians. It showed similar ignorance on behalf of the British to the Indian customs yet here the location is Africa. I could see the same simplicity in the Africans as I could see in the Indians. History shows us, however, that Africa does not receive her independence as fast as we do.

The racist undertones, coupled with and a total lack of sensitivity to the text's subtleties, worried Leslie. In the face of text misconstruction, Leslie reacted by spending more time on the text because she learned that the program could not offer the level of analysis that she believed classroom discussion could. She spent three computer lessons on the text and additional in-class discussion in the Campbell classroom in the spring semester. She additionally requested its inclusion as a text on their third exam. In fact, in the spring semes-

ter, Leslie devised comprehension questions that students were to answer while reading the text on-line. Classroom intervention was an essential component of computerized lessons, Leslie believed. She was not willing to allow students to draw interpretations based solely on their computer readings. Leslie was further convinced that mediation by the teacher was as important to computerized reading.

In March, I observed a lesson in which Leslie's students read "*Leçons d'Afrique.*" Some wrote answers to the questions she had created for them; others translated the text as they read aloud pointing at the screen and clicking on English definitions. One student exclaimed that this was a "cool way to read." Leslie smiled and moved around the classroom answering questions as students raised their hands. Another student praised her when she clarified a portion of the reading he had not understood, "You are twice as good as this computer," he grinned. Leslie laughed, "Why thank you. I'm glad. It's not going to replace me yet." His words reinstated her identity as "teacher of French" as opposed to "mediator of technology and text."

Leslie saw the classroom as a place for discussion between teachers and students. Since the two major computerized programs available for classroom use focused on writing and reading she valued computer mediation only as long as there was also teacher-student-text interaction. Her experiences during her first semester with the program made her resolve to take an active role in the classroom when her students were reading on-line.

Thus, as the year progressed, Leslie employed several coping strategies which included: 1) acknowledgment of her limited technical ability; 2) reliance on information provided by her peers about how the equipment or network was performing; 3) avoidance of the computer classroom altogether; 4) over-planning; and 5) expanding or reinventing computerized activities to meet her personal goals for language teaching.

"Computer Room User"

In speaking about the "computer-equipped classroom" with Leslie, I noticed that the lexical markers she preferred reflected a division between the two environments: one was a "classroom"; the other a "computer lab" or "computer room." In her mind, there was a lack of integration both conceptually and programmatically. Thus, her way of conceiving the two environments privileged the equipment in one and the French language teaching in the other. Even by the end of the spring semester, Leslie, writing about her experiences with technology for teaching, used the term, "computer room user" in reference to herself.

Consonant with the above semantic divisions, in communicating about technology, Leslie was vague, uninformed, and uninitiated into the world of technical vocabulary. She often searched for the words to make a point. In an interview in March, after using the technology a full six months, Leslie still struggled to make herself understood:

> And on our first day we had all those problems. It was mostly, I know for some of the computers, it was that thing where it won't open again because it was already open, but it's hidden. I had to figure out what to do. And then some people got it up, but we didn't know how they found it, so it didn't help us with other people. And we'd also been told if too many people were on it at the same time that things happened. So I just figured that that was what was going on and there's no one to ask.

Leslie's difficulty in finding precise vocabulary for technical events which occurred in her classroom suggests that she did not view the technologized classroom in a coherent manner. Moreover, Leslie's deficiency in technical terminology offers evidence that there was dissonance between her job as a teacher in the computer-equipped classroom and meaning construction in "talking about the objects" in the classroom with which she and the students worked. Her inability to express herself with ease when describing technical failure, for example, points again to a funda-

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mental lack of meaning construction in the area of "talking about the computer." If she cannot name what it is she is referring to, how then can she possibly be expected to make sense of it? How can she ask for help if she cannot describe what has gone wrong? In addition, most of the lessons I observed were beset with technical difficulties: applications didn't open, students lost text, or computers didn't boot up.

On one occasion, when a student needed help saving a document, Leslie, sitting beside her, also experienced trouble using the mouse to point at the A drive. As she tried to find the A drive (there were many drives to choose from since the computers were connected to the university network) her strategy, she told the student, was to "jiggle it around" until the A drive appeared. Leslie explained to me that when she couldn't find the A drive, it "helped to keep clicking up and down on the scroll bar." This section illustrates yet again that Leslie had not yet become apprenticed to the technical discourse or events of her own classroom.

As a professional, making sense of one's work environment is fundamental to defining one's work, having control over it, and talking intelligently to others about it (Berger and Luckmann 1966; Bruner 1990). Because she separated lexically and semantically the concept of "computer days" from what she viewed as the relatively nonproblematic "regular classroom," Leslie's job as a teacher using technology wavered between survival and confusion. Thus, for Leslie, both the "social and discoursal relationships" (Freeman 1991) and the "interpretive frames" (Galloway 1991) she used to understand and carry out her practices as a teacher had never been completely "meaningfully ordered" (Berger and Luckmann 1966) in the computer-equipped classroom.

Leslie's strategies for survival, however, were coupled with the feeling that "in spite of herself," her "technological horizons" had expanded. Her successes were primarily related to her academic and personal pursuits. She claimed that she could access the library from

her office and that she was using electronic mail daily. Nevertheless, having taught with computers, she was reassured that a computer could never replace the teacher. "Nothing beats a good old-fashioned, two-way discussion. In fact, my greatest concern is that these seemingly self-sufficient, all-encompassing programs will be misused in just that way."

After nine months teaching in a program designed to integrate technological innovations into French language courses, Leslie continued to participate in the event of curricular change primarily by questioning its merit and by not questioning the teaching paradigm with which she was familiar. I argue that among possible explanations are the following: 1) computer teaching imposed restrictions on the type of activity students engaged in; 2) the technology was often enigmatic and unpredictable, and required technical expertise that neither the teacher nor all the students had; 3) its merits were either misunderstood or never fully disclosed; and 4) the training Leslie received did not, in her opinion, prepare her to teach in the classroom. As she perceived the situation, the computer imposed its problems (technical) on the primary problems (pedagogical and social) of the classroom. While Leslie did not always meet in the computer-equipped classroom, or create a new computerized activity for every class, it did not seem to be an overt rejection of the new learning environment, as much as it was a response to not always knowing what to do in such an environment or not having the time to create activities that made sense. Yet when she did meet there, she endeavored to use technology in a way that she felt would benefit the learners, her students. Leslie, whose patterns of teaching would have to be redefined and reshaped to fit the new technological imperative that had been initiated by the LLTI, was uncertain that this would be a worthwhile endeavor. Teaching with computers would oblige her to create new practices, accumulate new knowledge and ways of handling her material and students, a time-consuming task at the beginning of a doctorate program in French civilization. In 1996 when

the research process and write-up for the present study were completed, Leslie had accumulated other teaching experiences in both the French and the Comparative Literature departments, but she still had not returned to the French 103 classroom, a course which continues to meet weekly in computer-equipped classrooms.

Implications and Conclusions

This article has served to expose the ways in which curricular innovations impacted on Leslie's practices as a new French teacher at Eastern. In the process, Leslie employed a variety of coping strategies and engaged in many techniques that proved effective in helping her "survive" the weekly meetings in a computer-equipped classroom. But Leslie did not seem prepared or ready to change or question the teaching practices she had engaged in for nearly a decade before coming to Eastern. The computer would have to fit her practices, not the other way around: "I don't think we should take French to the computer. I think the computer should be brought to French. French is the focal point." The classroom had esthetic properties in the form of "spontaneity, creativity, and interactivity" that she believed were diminished when the computer was introduced. Cuban (1986) suggests additional reasons why many teachers may lament the introduction of machines in their classrooms:

> Because so much of teaching is imagination, improvisation, and pacing combined with student rapport, shifting the center of gravity to machine-student exchanges lessens greatly the joys inherent to the art of teaching. At a deep level that often goes unspoken, I believe that many teachers may sense how the introduction of machines into classrooms endangers those intangible, highly prized rewards that count so heavily in why teachers decide to endure in a most difficult but intensely satisfying job. (90)

What additionally may have frustrated Leslie about computers in her classroom was that, as Streibel (1991) explains in his critical analysis of computers in education, "the tech-nological delivery system" had become the "central organizing factor in classroom life," making "the classroom a workplace structured by someone other than the teacher (302). Viewed in this way, the computer is not just another delivery system, rather its presence in the classroom creates an environment that has "certain values and biases associated with it" (283).

Similarly, Cuban offers a view of technology adoption by teachers based on what he terms "situationally constrained choice":

> The explanation I have constructed argues that, because of the severe constraints imposed upon teachers by the classroom and school as work places and the imperatives of their occupational culture, teachers will seek out those tools that meet their tests of efficiency: Is it simple? Versatile? Reliable? Durable? What's the personal cost in energy versus return in worth for students? Will these new machines help solve problems teachers (and not nonteachers) define? (66)

Kerr (1989), writing about his experiences with initiatives to integrate technology into educational programs, declares the work of educational technologists too distanced from the work of ordinary teachers and takes issue with the major underlying assumption that the teacher's role must necessarily change as the adoption of computers takes place:

> …[T]he way that many educational technologists think and write about teaching suggests that the teacher's role is something to be refined and shaped by principles of instructional design: inconsistencies are to be smoothed out, digressions eliminated, predictability developed. The principal product of the educational technologist's work—a carefully prepared set of instructional procedures—is designed in such a way as to minimize the teacher's contribution. Indeed, many educational technologists would posit that an important aspect of their work is to eliminate the need to have a human instructor present. (6)

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Adoption of technology in the classroom, according to Kerr, has followed a "rational-empiricist model" which includes three assumptions: 1) teachers find technology easy to use; 2) technology readily fits into the context of classroom activities; and 3) instruction should become a rational science, the overriding assumption being that technology improves teaching. Recalling Cuban's earlier assertions, Kerr, accordingly, found that studies following this model have labeled teachers "resistant to change." Kerr proposes bringing together teachers and educational technologists in ways in which they can work jointly in several directions:

1) preparation of models of teaching-with-technology, 2) design of software, 3) creation of computer-based tools to support teachers' professional development, and 4) improvement in research" (11-12). The latter proposal includes "anthropological study of classrooms and examinations of teachers' professional thoughts-in-action. (11)

Kerr asserts that the failure of educational technologists to understand the work of teachers may be detrimental to the processes of integrating beneficial technologies in the classroom. He, therefore, suggests:

[R]ather than try to supplant models and practices that teachers have developed to cope with the uncertainties in their world, we should develop models of teaching-with-technology...that recognizes those problems, seek to alleviate their impact, and provide...the opportunity for teachers to expand their thinking about what is possible in the classroom.(12)

Kerr continues:

The first part of this task is therefore to understand better teachers' models of daily classroom activity, what place technology has in those models, and what meaning technology has in the context of the constraints and uncertainties with which teachers must deal.

Part of this investigation of meanings must deal with the unconscious assumptions that teachers, students, and parents make about the role and value of technology in education, how successes or failures are ascribed to persons, materials, or approaches. Another part must probe teachers' motivations and sources of reward in teaching, and consider those in relation to what technology either provides or takes away. (12)

Teachers' implicit theories, beliefs, and attitudes about their work, their students, and lesson content and materials impact the learning environment they create. Teachers are viewed as resistant to change but have usually been brought in at the tail end of policy decisions aimed at educational reform targeting their classroom. As Martin (1991) points out "Implementation is typically mandated from the top down and instituted from the bottom up" (201). What has been forgotten, however, is that, "individual stakeholders at all levels in the process have significant influence on the final outcome" (Martin 1991, 210), especially the teachers.

While technology in the foreign language classroom may have the capacity to realize all its promises, evidence in this article suggests we cannot assume, that because the technology exists, its potential will be realized. An important implication is that administrations should not try to draw conclusions about the role of technology until they are sure that technology is working and being used in the most productive and educational ways possible. Quite simply it may be pointless to talk about the impact of computer technologies unless we first know something about the social and cultural worlds in which technologies are presumed to have an effect. Moreover, this study offers further evidence that the research on computerphobia may benefit from descriptive and in-depth analysis of this phenomenon among educators in order to substantiate such a label.

Leslie's voice raises consciousness about what it means for teachers like her to integrate computer technology in the foreign language

classroom. Given the qualitative design of this investigation, it is not my purpose to generalize or to formulate specific recommendations for future actions; however, in light of the issues and arguments raised in this article, educators may want to consider revising their stances on teaching and training for technologized classrooms and electronic learning environments. Quite simply, more effort needs to go into teacher development and involvement. Administrators, educational technologists, trainers and implementers of technology initiatives must keep in mind that not all teachers will respond to integrating or using technology in the same manner. Indeed the application of technology in the classroom may not be seen as useful for people like Leslie who haven't become fully assimilated to a technological world view, who don't perceive they need or want "tricks," as Leslie referred to them, to enhance their teaching. However, my close dealings and interaction with Leslie convince me that, as Kerr suggests, she may have benefited from simply being asked (by the supervisors and trainers) what she perceived the introduction of computers would mean in terms of classroom practices. During the training seminars that were held at Eastern no time was allotted for simply letting the teachers "grouse" or express their fears. E-mail at Eastern was used to report technical failures, but not the impact of those failures on the lessons or lesson-planning. Those involved in organizing and carrying out technology training may want to consider follow-up intervention several months after training has taken place in the form of focus-group interviews with teachers charged with technology integration. As Leslie's experiences show, computer novices may benefit from being paired with experts both during training and teaching. Leslie commented that she appreciated the technical assistance offered by the other TAs and felt comforted by my presence in her classroom, even if the nature of my research did not permit me to solve all of her technical difficulties. Computer experts or technophiles exist among most teaching staffs. They may need to be pinpointed at the outset of any large implementation involving technological innovations and be given release time, course-work credits or remuneration for offering help, advice, and mentoring. Technology integration must be viewed as a long-term engagement, one that needs follow-up, care, and constant support in order to reap the benefits.

The current investigation provides insight into one teacher's experience and perspectives on incorporating computer-based lessons, yet many questions remain unanswered. Other teachers' voices are essential to forming a more complete picture of computer technology integration and use. Life histories of foreign language teachers, in conjunction with a more detailed analysis of their belief systems and decision-making processes in implementing innovative curricula, open a much-needed area of research. It would also be informative to conduct more qualitative studies of different models of technology implementation such as in-class and out-of-class use of the Internet.

If we are to believe popular reports such as those in *Time* magazine, although 80 percent of schools can access the Internet only "20 percent of public school teachers feel prepared to use technology in their classes," and in 1999 schools will "spend about $88 per student on computer equipment, but only $6 per student on computer training for teachers" (Hamilton 1999, 85). These are statistics to keep in mind as more institutions of higher education contemplate restructuring their language learning environments in order to provide an array of technological offerings, or as in the case of Eastern, electronic classrooms. This study reminds us to listen to the needs of the primary implementers of technology, our teachers. When we begin to scratch beneath the surface of teachers like Leslie we gain valuable insights on teacher beliefs, classroom decision-making processes, and practices. These insights may ideally help improve teaching, and, specifically, teaching with technology, whereas dismissing the Leslies in our educational systems will not.

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NOTES

[1] Pseudonyms have been used for people, academic organizations, places, institutions, and commercial software in order to protect the anonymity of the research participants.

[2] One of eight teaching assistants in French 103, Leslie was part of a larger educational initiative sponsored by Eastern's School of Liberal Arts and supported by $350,000 in grant money from IBM. During the 1992-1993 academic year, three classrooms in the basement of the Liberal Arts building had been renovated to include eight or nine computers in each, with networked hardware and software and a liquid crystal display panel to allow for projection from the teacher's podium computer. In 1994, printers, audio, CD, and videodisk equipment were added. The Language Learning and Technology Initiative (LLTI) required that language courses in French, German, and Spanish meet once a week in these classrooms. The LLTI was composed of professors appointed by the Dean of Liberal Arts, who supervised third semester language courses, teaching assistants who assisted in coordination of these courses, and personnel from computer support services. The committee met on a regular basis from 1992-1994 to discuss issues of technology use and integration both of a technological and pedagogical nature. As an assistant coordinator of French 103, I was among the teaching assistants chosen to be on the LLTI committee.

[3] The computer-equipped classrooms were located in the basement of the Liberal Arts Building known as Simmons which was directly opposite the building which housed the foreign language departments. The noncomputer classrooms were located in Campbell, a building which had been newly constructed for classroom purposes only and was a 10-minute walk form the other two.

[4] For another perspective from the same research see Burnett (1998), and for in-depth discussion of the larger study see Burnett (1997).

[5] Contact with Leslie was maintained until 1996 when the research process and write-up were completed.

[6] "*Assistant Français*" was one of two language programs to be loaded, stable and running on the university network. It therefore made sense to Leslie to train her students how to use it for short compositions. The other program, "*Leçons d'Afrique*," was an interactive reading program that Leslie used later in the semester.

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