STUDENT INTERACTION WITH MINITEL TELECOMMUNICATIONS

JoAnn Hammadou
University of Rhode Island

The Promise of Telecommunications

Telecommunications seem to offer an ideal solution to several thorny educational problems: (1) how to provide *up-to-date cultural information* to students when the teacher's own cultural information may date to much earlier personal trips abroad, (2) how to provide up-to-date foreign language information in *specialized areas* outside of the teacher's realm of personal experience (e.g., nursing, business or engineering), and (3) how to provide students in the United States with *authentic contexts* in which to develop their fledgling language skills. Telecommunications may, therefore, help provide experiences and information to students that are otherwise difficult to obtain.

Telecommunications might also be one solution to a logistics nightmare that teachers often face. With a 1982 survey, Brickel and Paul identified the major topics of concern for inservice secondary school teachers. One of the most common responses was the need for guidance in developing and teaching innovative curricula, including the use of self-instructional material. In addition, approximately 40 percent of the respondents were teaching multilevel classes (more than one level in the same class hour or more than one language in the same class). While teaching a level three course and a level four course simultaneously is not a common problem in university language courses, the impact of false beginners and the strain of widely diversified student backgrounds is. For all of these teachers, the computer workstation may be seen as a potential answer to their problem of how to carry on multilevels of instruction simultaneously. This option may improve the teacher's ability to provide tasks for students at one level of proficiency that will continue to move them forward while teacher-centered work continues with another group. For example, telecommunications from a computer workstation have been used to correspond with native speakers abroad, to generate authentic reading texts on up-to-the minute news topics, to research specialized topics (such as business, science or education), to simulate buying and selling or to actually order goods from abroad, and to serve as an example of technology in daily life in Europe.

These calls for the use of telecommunications are subsumed under the larger call to educators to incorporate the use of technology in education. Teachers of all content areas have heard requests to help their students become more computer literate. They have been told that all teachers should increase their use of modern technology. The response to these requests has been mixed. Some teachers report that they do, indeed, have access to computers, but that these computers sit silently on closet shelves collecting dust. Other teachers expend tremendous amounts of time and energy learning about computer programming and creating their own courseware only to hear criticisms such as the following: "Their software represents a herculean investment

JoAnn Hammadou teaches in the Department of Languages at the University of Rhode Island.

of time for little return" (Smith 1987). Some teachers, such as Sayers and Brown in *Bilingual Education,* proclaim their efforts in computer networking to be "a perfect fit" for their students. In sum, there are reasons to believe that telecommunications/computer networking could meet several educational needs, but many educators have reason to be skeptical or at least cautious in their reactions to this hope.

The Scope of Telecommunications in General and Minitel in Particular

Telecommunications is the juncture of computing and communications technologies. It is a rapidly changing set of services and equipment that are the current driving force, experts say, behind a technological revolution. The impact of this new combination of computer technology and communication technology, some believe, "will rival that of the replacement of muscle power by machines" (Wright 1990). In fact, many are adopting the phrase "information economy" coined by Marc Porat of Apple Computer to describe a fundamental shift in our economy away from a base defined by goods produced to one in which wealth is generated by amounts and types of information managed. The information content of a product (such as advertising and legal services) now accounts for a greater percentage of its cost than its consumable content does. While these changes in focus are extremely confusing even to business managers and economists, one change is very clear: the minimizing of the national border. The "information age" is bringing Marshall McLuhan's "global village" further into reality. Fax machines, automatic bank tellers, cellular phones, computer networks, and high-definition television are adding to our ability to "abolish both space and time as far as our planet is concerned" just as McLuhan described it in 1964.

Meanwhile, in France, the government-owned telecommunications monopoly (Telecom) has put into place the largest national network of electronic information services—called Minitel. In 1978, Minitel was designed as the world's first electronic telephone directory. De Lacy claims: "Strongly influenced by a 1978 report on the computerization of France, which warned that the technophobic French, unless they rapidly became computer-friendly, would be left home making *Camembert* and *coq au vin* while the Americans and the Japanese fought it out in the microchip major leagues, Telecom officials came up with a plan to force the French to the keyboard" (De Lacy 1987). The Minitel computer terminal was distributed to telephone owners free of charge in place of the already costly-to-produce telephone book. The French people would become familiar with computer technology, and their then antiquated telecommunications system would be improved and supported. Besides giving away the terminals as part of the telephone subscription fee, the French government chose a pay-as-you-go policy for use of information services that were steadily added to the network. Unlike in other countries, the French do not pay any access or subscription fees and are charged on their telephone bills only for the time they use the network.

The computer telephone directory has grown now to more than 13,000 services available to over five million Minitel users in France alone (France Telecom). Users can buy and sell, using credit cards, from an enormous range of companies. They can call up information on agriculture, education, jobs, taxes, leisure activities, entertainment, and real estate. They can book travel plans, consult news and weather forecasts, manage their finances, and chat with friends—all 24 hours a day.

West Germany and Great Britain also started similar networks at the same time but have been much less successful with only about 200,000 subscribers each. The Prodigy system in the US and Captain system in Japan also have not done well. France's Minitel has spread, however, to

seven other countries, including the United States, where it is making steady gains. The need for increasing international cooperation is the one worrisome unknown for this burgeoning network. Experts warn about the lack of internationally agreed upon technical standards, the unknown effect of the pending European common market, (Guterl 1990) and the need to share costs internationally (Wright 1990) as potential stumbling blocks to continued growth.

Need for Research in Pedagogical Applications of Minitel

Despite some reservations about the continued growth of Minitel, its current successes have inspired educators to call for its use as a pedagogical tool. For example, Challe, in *The French Review*, calls for its pedagogical use for the following reasons: its force as a current social phenomenon in France, its wealth of culturally authentic documents, and its diversity for use in teaching language for specific professions (1989). Both AATF and ACTFL have offered workshops to American foreign language teachers in its use.

What should not be overlooked in this equation is the need for research that will investigate which pedagogical needs, if any, telecommunications can successfully fulfill. This research should have as its ultimate goal a body of facts from which sound educational choices can be made. Otherwise, conflicting calls from various experts in the field will leave practitioners without support. For example, Curtin and Shinall claim that students should be "in control of the material" when using computer assisted instruction, but Pedersen's research demonstrates that, at least in reading comprehension, program control over the display of passages results in greater comprehension than reader control. Research results may contradict current "common sense" but lead to fuller understandings in the long run of the best use of educational technology. Testimonials alone need the more

principled support of empirical investigations. Pedersen warns that when testimonials "are permitted to sway important curricular decisions without corresponding research evidence, enthusiasm becomes a serious flaw" (1987). Without the description of context, subjects, and limits of a research study, applicability of a given testimonial to a new situation is unknown. McGraw's testimonial for the language laboratory, that it would allow the teacher to "enter into a much closer individual relationship with each of his students," may have been less helpful to the failing language labs of the late 60s than would have been research that demonstrated how best to capitalize on the strengths of the technology.

Another lesson from past research efforts on technology for those interested in pedagogical uses of telecommunications lies in the area of comparative research studies. The computer has been the source of a number of studies of the Method A versus Method B variety.[1] These studies have tried, for the most part, to prove that the use of computers is beneficial. Unfortunately, these studies all suffer from the unavoidable problem of lumping many factors together that then become confounded as possible sources of differences measured during the study. The disappointing results from these studies should dissuade future researchers from attempting equally problematic studies of telecommunications versus some traditional aid to instruction.

On the one hand, advocates of telecommunications must be willing to accept and actively disseminate "negative" results in the studies of their pedagogical use. Otherwise they will doom telecommunications and the computer lab to the dismal fate of the language lab through overextended promises. On the other hand, skeptics about telecommunications must keep an open mind to the potential values of telecommunications and the computer. Earliest attempts with them may falter and only later,

through trial and error, uncover their greatest potential. Without an open mind to this possibility, skeptics will risk handicapping themselves and their students during the growing information and technology age.

The pedagogical use of telecommunications in foreign language education has not yet been developed as an area of research. No research studies on the subject have yet been published. It should be noted that not only quantitative studies are needed but that qualitative studies of the phenomenon are also necessary, because they will also provide important information. The statistics of quantitative studies guard rigorously against two general categories of error. "Type one error" is believing one's results to be true when they are not. Rejecting a hypothesis when it is really true is "type two error." But another danger is what Tukey is credited with calling "type three error"—asking the wrong question (Kirk & Miller 1986). A thorough qualitative study will submit data to multifaceted analyses that can help educators understand the impact of telecommunications on language learning and can direct further study into promising new areas. Identifying promising questions to ask in the first place is one of the strengths that the ethnographer, or qualitative researcher, can bring to the investigative picture.

What follows is simply a description of two language learners' introduction to telecommunications. This pilot investigation uses elements from the ethnographic study paradigm which include: an open-ended study that searches for both trends and study questions within the data rather than answers to specifically prescribed questions, participant participation in data analysis, a willingness to deal with many variables at once outside of experimental controls, and the use of inductive reasoning to assess results and generate the relevant questions. The purpose here was to describe the language learners' initial encounter with a telecommunications system when they were left to their own devices to explore, experiment, and learn as much as possible about the system in a completely independent mode. The author hopes that researchers may be interested as a result to pursue answers to some of the many questions that the encounter generates.

The Setting

At the University of Rhode Island, one Macintosh Plus computer terminal was outfitted with the Minitel emulation software provided free of charge by Minitel Services Company and a 2400 baud modem connected to a telephone line.[4] This system was located in the language laboratory.

The Participants

Two students, Denise and Jim, were selected to explore the system. Both students had just finished their second year at the university, were majoring in Business and minoring in French, and had similar exposure to the use of computers. Both students had been enrolled in the same French courses together throughout their two years, having just completed a traditionally third year sequence of Conversation and Composition courses designed specifically for Business / French students. They had also completed the same set of three courses using computers: a computer science course that was an introduction to computer programming, a business computing course and a statistics course. Neither student had used the Macintosh computer extensively beyond required word processing in their French composition work, but both had worked more extensively on IBM PCs and mainframe computers for their business assignments. Both students had used computers for the following tasks: writing programs, running programs, using spreadsheets, calculating statistics, word processing and playing games. Neither owned a computer. Both students were enrolled in French study abroad programs for the following year. One student, Denise, had spent 4 months in France, whereas Jim had never been abroad.

Both were successful students of French with French GPAs above 3.0.

An Overview

The participants were instructed to explore the Minitel system and learn as much about the system as they could during two independent sessions with it. (See Appendix for instructions given to participants.) Each participant completed a questionnaire on prior knowledge of computers, telecommunication and French study. Each participant spent two thirty-minute sessions using Minitel. Their think-out loud processes while using Minitel were tape recorded and transcribed. Each completed a post questionnaire and participated in a post interview with the observer.

The Limitations

The description that follows lacks several of the characteristics of a complete qualitative study. For example, there is confirmation between the observer and the individual student participant about the accuracy of the description of these events but no third party's view. Nor is there time or space here to complete the cycle of generating clear-cut research questions and pursuing their responses through further data. The author hopes that the descriptions here will serve rather as a call to do so by many others. Furthermore, transcription was in standard sentence format and did not record all potentially valuable linguistic information such as length of pauses, intonation, etc. Certainly no mandates for pedagogical practice can result from a description of two individuals' exploration of a network. Rather it is hoped that *questions* for further study will be provoked by the descriptions that follow.

The Encounter

Although both students had had a number of occasions to use computers, neither student had ever used a telecommunications system. In questionnaires prior to the experience they had some ideas, nevertheless, on the meaning of the term. Jim: "Meth-

ods of correspondence between any two or more parties involving both audio and visual electronic devices." Denise: "Communication via TV, radio, computer, etc." They had less notion of the meaning of Minitel. Jim: "? A telecommunications system?" Denise: "a program." Both students were told that they were being asked to explore a telecommunications system, discover how it worked and report on its usefulness to other students. Each student visited the computer station in the language laboratory separately on two occasions for 30-minute sessions on Minitel.

At the beginning of the first session each student was given a short document to read from Minitel Services Company, the first volume of *Minitel Highlights*, a newsletter for Minitel users that provides a short introduction to the system, lists some common computer problems, and defines the Minitel touchbutton commands for Macintosh computers. The newsletter explains, for example, "Minitel is the first Electronic Directory of on-line services offered by local, national, international businesses and entrepreneurs. By exploring the Minitel World Directory, you can locate a complete range of on-line services—from chat, shopping, and travel to corporate services or specialized services for the hearing impaired."

The students were then instructed to acquaint themselves as fully as possible with the elements of the Minitel network that appeared interesting to them and to think aloud into a tape recorder as they worked in order to maintain a record of the process that they went through to learn the system. They were told to work independently and not to expect the observer to answer their questions for them while they were on-line.

During each of the four sessions the students explored the Minitel network randomly after being given the goals of learning as much as they could about the system, finding what interested them, and evaluating the network's potential benefits to other students. The observer sat quietly in the

back of the small room behind the student as the student talked outloud and sampled services in the Minitel network. Through the personal choices they made, each student tried different services within the network.

Services selected. Jim sampled twelve different services during his first session and three services during his second. Denise sampled four services during her first session and eleven during her second. Overall they sampled a comparable number of different services during the total hour spent connected to the Minitel service. The variety and branching capabilities of the network are reflected in the variety of the selections made by the two students. Despite the fact that the students entered the system at the same main menu of choices and were both completely dependent on the menu choices to guide their choices (having no prior knowledge of services to allow them to bypass menu offerings), their choices quickly led them in different directions. Of the fifteen services explored by each, only one service was viewed by both students. For example, Jim explored a news service, three business services, three sports services, and a regions of France data bank; Denise tapped the Airport and Airlines services, French phonebook, a chat line, and a science data bank. Both investigated Eurobase, a business related data bank.

While exploring the different pathways of the menu-driven system, each student selected a different selection approach. Jim selected "French Connection" from the main menu and then selected the French "MGS Directory" within that to select names of services to sample. He repeated this route nine times. Only twice did he try an alternate route for finding lists of services through "Services by Category," and once he quit completely and reentered the system. Denise, on the other hand, used the earliest encountered list of services directly in the "French Connection" menu seven times, continued to the second layer of choices in the "MGS Directory" three times, used the "Services by Category" menu two times, and quit and reentered the system two times.

Selection difficulties. Both students had a difficult time moving about within the system. During Denise's first session the system did not respond as she expected or wanted it to on three occasions. During Jim's first session he received responses different than expected on 24 occasions. During Jim's second session he received unanticipated screens from what he expected seven times, while Denise received unexpected screens nine times.[2] The participants and observer agreed that nearly all of the unanticipated computer responses occurred when trying to change from one service to another. Although both students reported later that they originally noticed the "Change Service" touchbutton, neither remembered at first to try this function key and as a result they received unanticipated results 26 times when trying to leave a service (Jim, 18; Denise, 8). Denise did try the Change Service touchbutton during her second session on two occasions but was still surprised to find herself back to the earliest main menu. They also received unanticipated screens trying to access a service thirteen times and when using a service four times. Typical of the entry problems is Denise's comment, "I got a message saying that this program was not accessible by this number. Now I'm a little bit confused." Typical of the exit problems was Jim's comment, " I'm going to get out of this. OK. I want to learn how to leave. Every good menu should have a way to quit." An example of the unexpected within a service occurred when Jim moved through several screens about regions of France. He said, "Figure they'll give a map of France? Neat. Why don't I get a map though?"

Linguistic elements. The participants here were asked to think aloud as they worked with Minitel. The result is conversations with, at various times, themselves, the observer, or the computer. Given the task of

thinking aloud, they alternated their focus among questions to themselves, descriptions of their choices / actions, reading text from screen, questions addressed to the observer, and questions or answers addressed to the computer screen.[5]

Jim's first remarks on tape were addressed to the observer, "Do I just put it on here?" The observer declined comment in order to take a reduced role in the student's explorations, so Jim's next remarks were, "You're not going to tell me. For information... [now reading from the screen] For help press guide #3. I'm already confused." A few minutes later the screen asked Jim for his secret identification. He asked, "Do I have an identification? Then he read, "Tapez envoie." Now turning to the observer he asked, "What is envoie?" and received an answer ("Send.") He continued to the observer, "What is my identification?" ("I don't know.") Finally addressing the computer screen he said, "I'll try Jim. Envoie. Incorrect? No. That's me. Honest."

At one point in the conversations with the computer, the words on the screen became those of a living, breathing individual at another keyboard in France connected to the computer system. For Denise that connection was unknowingly to a *"messagerie rose"* (soft porn chat line) at which point her "think aloud" went silent for a time and resumed with: "After reading some personals, definitely decided that Club Femme was not for me."

When entering a chat line service, Jim's screen displayed a connection with that of someone's in France. He read (and translated): "Do you know how to get results of the bac high school exam? He said and typed onto his screen: "Je n'ai jamais passé le bac. Je suis américain." At which point he reported, "Oh good... She's disconnected."

No directions were given to the participants in regards to choice of language use during their encounters with Minitel. The overwhelming language choice of the par-

ticipants was English. There were only three instances in all in which the French on the computer screen seemed to be a stumbling block, however. Jim asked the observer the meaning of *envoie* and *CV*, which were defined. In the final example, Denise read "Pas d'annulation sur champs vide," and said, "Which I gather means I can't do that." While the French on the screen was generally not an obstacle, the participants spoke, apparently as they thought, in English, even translating into English many of the screens of text that they read in French. Only a few spontaneous thoughts were expressed in French as when Jim saw a disconnection from a chat line and said "Elle est sortie" or when Denise read from the screen "plus de vol ce jour," "question pour un autre voyage," "pas de vol précédent."

Participants' Reactions

In the postquestionnaire, both participants now had a better idea of what Minitel is. They defined it as "a global computer network, based in France, which allows access to various public and private services;" and, "a type of telecommunication, it hooks you up with other businesses, people and information programs all over the world." When asked what they liked best about telecommunications they answered: "In the future, in a business setting, telecommunications could be useful in the board room, eliminating the need for actual meetings of foreign or distant parties;" and, "with Minitel I could find the number of a friend in France without the hassle of an operator. If I wanted to buy or sell something I could and I can get information about the airports for when I go to France."

Jim's advice for Minitel's educational uses included: accessing French news systems, learning about different cultural elements such as the availability of leisure activities, and "meeting people" in French. Denise suggested that students be given an assignment to plan a trip to France and gather such information from Minitel as

exchange rates, someone's phone number, their flight time to Paris, and choice of hotels and restaurants in France. Both agreed it was "fun" and "educational." Denise recommended that the "French Connection" services would be most helpful to French classes, and she thought that the "linguistics" section that she was unable to access sounded promising. Jim was more reserved in his recommendations for pedagogical use. Despite sounding very engaged and enthusiastic when using the system himself, his first written comment to its educational uses was "I don't see any." He then modified that by saying that students could be asked to "meet" someone through the system or keep up with news or news headlines. He warned that he had used much less French himself using Minitel than he did with other previous French lab assignments such as those linked to videotapes. Jim warned against using the personal ads and Denise recommended against any of the chat lines (based on her experience), saying that they did not "have anything to do with learning computers or French."

One post-question was: How could Minitel be improved? Jim answered: "More user friendly. I have a feeling that whoever wrote the programs assumed that the users had some computer knowledge." Denise reported: "By being able to go to the main index without relogging on, telling you exactly *why* you can't do certain things."

Both participants expanded on these thoughts in final interviews. When asked about the troubles they encountered they both made no mention of language barriers, but discussed their accessing and exiting troubles. Their solution, they agreed, had been to run through all the touchbuttons or function keys that looked remotely possible. When asked what they would have prefered to do differently, they could not think of anything. Denise added, "Random choosing is how I like to go through things. I like to browse until I find something that looks interesting and then look at that." In

addition, she was left wondering at the end why she had been unable to access some of the services listed. "It just said not accessible but it never explained if it was not part of a subscription, the program was messed up or what." Both felt that they had met the goal of learning as much as possible about the system in the time limit they had been given.

Jim enjoyed most being "approached" by the subscriber from France about the bac exam, and Denise enjoyed most finding the phone number of a friend in the phone directory. Most of their comments, however, related to Minitel's potential for the business community.

Discussion

The participants' exploration of the Minitel system clearly highlighted its diversity. While randomly exploring the system, the students quickly branched off into different areas and services. This brings immediately to mind the possible use of Minitel in instruction that focuses on individualization and on learners' personal interests or needs. Unlike a printed textbook or a reader that remains static, the Minitel screens are not only updated daily, but their texts sample a very large number of topics and interests. Where a premium is placed on needs assessments of individual learners, as is often the case in adult educational programs, the Minitel network may provide a ready-made chance for continuous variety in learning material, pre-catalogued by topic. Differentiated learning within each of the areas of computer literacy, language and cultural insights may result if students are given open-ended tasks or strictly defined ones.

Jim's concerns that he was learning more about computer use than he was language use must be addressed. If Minitel is to be a tool of the foreign language curriculum, its usefulness in the linguistic area should not be overshadowed by its usefulness in the computer literacy area. In this domain an interesting mix of variables may be at work

to influence where learning occurs. Factors that need to be accounted for include: the participants' knowledge of computers, their language proficiency and the task assigned and the students' view of it. For example, in Jim's case, the need to acquaint himself with the completely unfamiliar system could have overloaded his ability to concentrate on the French language on the screen. Or his previous ability in French may have made the reading of the screens too easy for him to feel that he was learning anything new about the French language. Also, the lack of need to extract any particular informational content from the services for the given task may have reduced attention to the linguistic messages beyond a cursory view of them.

It is always difficult to know whether the type of language the participants used was the *result* of the task assigned to them (thinking aloud while exploring the system) or whether this language would have been there regardless and was simply captured and made visible by the think aloud procedure. It seems likely that it was, at least, influenced by the assignment given. The transcripts of the participants' think aloud protocols show an interesting diversity of conversational-like styles, albeit in English. The use of the computer as a partner in dyads or even triads with two students may prove to be a profitable line of inquiry when pedagogues seek to simulate different conversational patterns for students in the target language. The ability to generate diverse target language conversation and generate new and accurate cultural data could make telecommunications a particularly powerful tool. It would be useful to know what telecommunication tasks tend to stimulate what types of student language and how successfully the native language could be avoided in completing them.[3]

Pedagogical Implications

The format of this encounter, according to the participants, seemed more conducive to expanding their computer skills and cultural knowledge than to developing their language skills. However, these students' language proficiency level was beyond the novice level, their reading skills were good and the task at hand apparently left them comfortable with only attaining the gist of specialized text. Given a more challenging task linguistically or with learners of different ability, the focus might switch to include the language at hand. These participants also may not have been aware of the language learning or at least language maintenance that they were able to sustain even with the task given them.

The participants and observer did agree that all of the problems during this experience were computer related and not language related and this despite the fact that the two participants had considerable computer experience. If the source for this difficulty lies in the task itself and not the learners, then the language teacher may well see this as an indication that greater guidance to students will expedite their use of the system. If they are given demonstrations or concrete examples of pathways through the system that they can imitate, they may move more swiftly to attending to the data contained within the system rather than its own intricacies. The student encounters with Minitel described here also suggest the usefulness of establishing some base line information about a sample of students' independent, unguided use of the system in order to use their problems with the system to create helpful guides or training for similar students.

Reading gains have never been put to the empirical test using telecommunications texts as reading materials. Minitel texts often require a response from their reader and, therefore, have a built-in interactive quality. This interactive quality may be exploited in instruction to demonstrate to learners the successfulness of their comprehension of a text, for example.

As stated earlier, the vast diversity of

services accessible with Minitel seems tailor-made for curricula that feature individualization, accommodation to the individual's needs and interests or specialized topics. The encounter described here implies the use of telecommunications to foster reading comprehension or spontaneous written interaction. Current pedagogical uses of telecommunications, however, feature the use of the network to generate real but distant audiences for students' more polished written communication. For example, the Harvard-Stanford Communicative Collaborative used electronic mail to co-produce a student newspaper of student writings. Student editors collaborate until an acceptable finished product can be created and shared between the two institutions (Frommer & Barson). Some high school programs have also integrated this writing/reading component into the language curriculum. In North Kingstown High School, RI, for example, upper-level students send letters to native speakers of French through the chat lines of the CTL-City network[6], often maintaining a running correspondence that can then be shared with other students via overhead display. The authentic context for writing with a distant audience that this allows adds realism and meaning to the task of writing in the foreign language.

Pedagogical emphases for the language classroom may develop, therefore, around audience awareness for prewritten texts, spontaneous written communication, reading comprehension of screen texts, cultural awareness or data gathering, or even possibly the three-way (or more) language exchanges brought about by discussions among student partners and their computer terminal. Instruction in the target language about how to use telecommunications becomes another possible example of content instruction in a second language when L2 becomes the vehicle for instruction in computer literacy. The selection of learning goals will obviously shape the direction of curricular planning for telecommunications

activities.

Handicaps to Overcome

The primary obstacle to the use of telecommunications in general and Minitel in particular is the total absence of principaled investigations into its strengths and weaknesses to guide educators' curricular plans. Nevertheless, individuals can and are experimenting with the inclusion of telecommunication activities into the language curriculum. One of the primary difficulties that they are facing is economic. Minitel services require a phone connection to one of Minitel's many major US cities, which for many users involves a long distance phone call. More importantly, users must pay a per minute fee for their use of a given service that may vary from $ .19 to $1.59. Access time must be limited, therefore, to fit most educational budgets.

There is no Minitel mechanism for cutting off an individual student's overuse of the system, though there are two automatic backup systems for cancelling charges when an individual user leaves the system without properly logging off. This inability to force an individual student off the network who may choose to overuse it, coupled with the potential of high credit card bills if that were to happen, require vigilance and inhouse supervision by educators that choose to include the service in their curriculum. At this time such financial considerations rather than pedagogical ones may mitigate against open-ended assignments or the use of random sampling of services by students and dictate more structured, pre-organized computer activities.

In addition, educators must prepare their reaction to the "messageries roses." Responses will vary, of course, depending on the institution and the individuals involved, but questions such as how or if to avoid them and what prior advice to give students who encounter them need to be established ahead of time.

Funding can be found for worthwhile

causes and should not be the sole reason for failing to expand into new curricular areas. Computer screens can be captured and saved as graphics for later use to reduce on-line times and costs, for example. Students can work at computer terminals in pairs or groups, not only to reduce costs but to add another language learning dimension to the experience. Nor are the *"messageries roses"* an insurmountable obstacle to the use of telecommunications for pedagogical purposes. On the contrary, the growing phenomenon of telecommunications suggests numerous interesting possibilities within the foreign language curriculum, and a number of promising avenues for educational research. There remain many potential areas of innovation and experimentation in the foreign language curriculum. If telecommunications can serve as an additional aide to the language learner, educators and researchers should explore its uses and report to the educational community at large on the outcomes for students.

APPENDIX

Instructions to Participants

You are exploring the use of the Minitel system of telecommunications. In two half-hour sessions, you are to try to acquaint yourself *as fully as possible* with the elements of the Minitel network that *appear most interesting to you.*

Use the tape recorder to keep track of everything that you do with the Minitel system. Describe into the recorder everything that you do as you do it. Try to maintain a complete oral record of the *process* that you go through in order to learn about the system.

After you logoff the system, write down any comments that come to mind about the experience and any questions about Minitel or about the experience that you want answered.

NOTES

1. See Pedersen (pp. 104-108) for a thorough review of these CALL studies and Chapelle and Jamieson for further discussion of threats to research validity.

2. The principal provider of access to France's Minitel in the US is Minitel Services Company, which provides free emulation software (914-694-6266) for IBM or compatible, Commodore, Apple II or Macintosh personal computers. It is a gateway to 21 other countries as well as France's Minitel, Telecom being a part owner. The service has phone connections to France via 122 US cities.

3. The students had no preconceived notion for the content of Minitel whatsoever, but they soon developed expectations for results to key function commands and types of screens (e.g., menus or text) that they would see as a result of these commands. The observer identified 43 comments of surprise in the transcription of the sessions that the students confirmed as unanticipated response screens.

4. These categories were postulated by the observer and accepted as accurate by the participants.

5. Examples to date are with ESL students lacking a common native language for whom English is the only common means of communicating in the second language environment (Esling; Johnson). The effect that the artificial nature of a similar *foreign* language discussion would have is not known, although, from a pedagogical research perspective, the increased ability to monitor all foreign language input received make this area of language research particularly appealing.

6. CTL-City (CTL) can be accessed through Minitel. It is the US subsidiary of the Paris-based CTL Télématique, one of the largest service providers on French Minitel. For the North Kingstown High

School French program—see Leveillee. Other high school programs are described in Sayer and Brown.

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