放送大学研究年報　第6号（1988）1-16頁
Journal of the University of the Air, No. 6 (1988) pp. 1-16

Teaching English through Telecommunications: Chiba to Kumamoto

Masako HIRAGA・Valerie Anne WILKINSON

電話会議システムによる英語教育：千葉から熊本へ

平賀正子・ヴァレリー アン ウィルキンソン

要　旨

放送大学では，地域拡大と将来の全国化に向けて，学習センターにおける面接授業に代わり得る新しい技術による遠隔学習指導システムの開発にあたっている．1987年及び1988年に，放送大学，放送教育開発センター及び熊本県とが共同で行った，電話会議システムによる英語のテレビスクーリングの実験について報告し，新メディアによる遠隔英語教育の可能性と問題点について考察する．

実験授業は，放送大学の『英語Ⅰ』を主な教材とし，ニコラス・ティール（同志社女子大学），平賀，ウィルキンソンが担当，隔週で五回，放送大学の面接授業と同じく毎回2時間15分にわたって行われた．熊本県内の四ヵ所に設けられた教室には，各々10名程の参加者があった．実験で用いられた遠隔手法は，電話会議システム端末装置，電子黒板，静止画伝送装置である．各々の装置に対して一本ずつ，各教室ごとに三本の通常電話回線を使用し，NTTの電話会議システムを利用した．

このような遠隔手法を用いて外国語の演習型授業を行うには，様々な問題がある．システム上の問題としては，音声の品質向上，機器操作の簡便さ，静止画伝送のスピード改善が急務である．学習者の動機，自信，性格，心理などにマイナス要因がある場合，遠隔手法の導入によってかえってそれが増幅されることがある．講師側の負担も通常の対面式授業に比べかなり大きい．機器操作に慣れていることはもとより，綿密な授業計画，システムの不調や故障時に備えた代案の用意などが要求される．

遠隔手法による英語教育には，技術面，教授面共にまだまだ改善の余地がある．しかしながら，生涯教育，継続教育，在宅学習などが時代のニーズとなってきている今日，このような試行の意味は大きい．めざましい通信技術の進歩を教育にどういかしていくかを真剣に問う時が来ている．

I. Introduction

This is a report about the experimental course of English conducted in 1987 and 1988 as a part of "The Kumamoto Project", a project of distance education from Chiba to Kumamoto by the medium of telecommunications.[1)]

We will describe the purpose and the content of the courses, the methods used, the

technical system and its problems, psychological problems, pedagogical problems, and suggestions for the further development of this teaching mode.

II. Purpose

The purpose of this project was twofold. The first was to develop the technical system and pedagogical methods for "schooling" at a distance, as a possible replacement for direct schooling at the study centers of the University of the Air in preparation for its projected nationwide expansion. The second was to offer English classes to Kumamoto as a part of their prefectural continuing education development.

More specifically, this distance education project was proposed to investigate the feasibility of conducting "schooling" for English as a Foreign Language at a distance, through the combined use of slow-scan television, telephone conferencing and electronic sketchboard.

All of the equipment makes use of the telephone system rather more economically than other technologies, and so, if it is useful, the implications will be far reaching. This is not just education "at a distance", but it is tele-conferencing, the conducting of English language classrooms simultaneously. If one teacher, using economical telephone equipment, can integrate several classrooms effectively, the methodology may be useful in situations where there are few teachers to staff study centers or in cases where a university has more than one campus.

III. Description of the Course

In both 1987 and in 1988, once a week, the students met ten times, from 6 : 00 p.m. to 8 : 15 p.m., but the "tele-schooling" was conducted every other week, for a total of five schooling sessions. The text material used was The University of the Air's "English One", which includes video-tapes used in the alternate weeks of the project. In both years, about 40 volunteers, distributed among four classrooms, about 10 members to each, cooperated with a team of teachers located in a studio at the National Institute of Multi-Media Education in Chiba,[2] which functioned as headquarters for the project. The first year's classes were conducted by professor Nicholas Teele of the Institute and Masako Hiraga of the University of the Air. The second year's classes were conducted by Masako Hiraga, with the assistance of Professor Teele, as Visiting Professor from Doshisha Women's University, and Valerie Wilkinson, Visiting Researcher of the Institute.

This report focuses primarily on the 1988 course. The allusions to the 1987 course are cited to show how this course reflects improvements made as a result of the 1987 experiences.

The 1987 Course

Four classrooms, located in Kumamoto City, Hitoyoshi, Hondo, and Arao of Kumamoto Prefecture, were each equipped with microphones and speakers for tele-conferencing, two television monitors, one for the slow-scan pictures and the other for the electronic sketchboard

The whole thirty volumes of the "English One" videos were viewed by the students in the alternate weeks of the project.[3] However, only material from the first four volumes was incorporated into the tele-schooling because the course was designed for beginners.

The 1988 Course

Four classrooms, located in Kumamoto City, Arao, Yatsushiro, and Ichinomiya were each equipped with the same devices as in 1987. In addition, a camera for sending shots of students was placed in each classroom. Also a television monitor and video cassette player were provided to play the video material from the text. An improvement over the previous experiences involved special equipment to reduce noise and modification of the routing of the communication.

This year, eight volumes of the University of the Air "English One" were used for the course aimed at intermediate students. Selected portions of the drama, "An Eye to the Future", were incorporated into the tele-schooling session in addition to the viewing of all eight volumes in the alternate weeks of the class

At the Chiba end, students from the University of the Air volunteered to be present at the sessions. Although they were not, strictly speaking, participants, it simulated the mood of a real classroom for the instructors. However, it seemed important to reduce interaction with these students to a minimum, because such interaction would make the members of the other distant classrooms feel like outsiders. Therefore, we conducted most of our interaction by calling out to students in the satellite classrooms by name and location, rotating among them frequently.

IV. Methods

The format of the class was to divide the time into three sections. In Part One, each week one classroom would do self-introductions and describe some features of their hometown. Part Two consisted of some structured exercises and interactive techniques for practicing English conversation. After the interval and the viewing of the video material, Part Three consisted of comprehension questions for the video material.

Preparatory Session

In the first class, the instructors began by introducing themselves and Makuhari, Chiba, where the University of the Air and the National Institute of Multi-Media Education are located. This provided a model for the proposed Part One, self-introductions and "show and tell"

Since most of the students were unfamiliar with the machines, an orientation session using English commands was structured so that all of the machines were touched and used by members of each classroom. The English instructions were reinforced by Japanese explanations to insure 100% comprehension. We also gave the students a list of model interactions with the instructors as a kind of protocol[4] for facilitating smooth communication and minimizing the silence. The function of the orientation was to strengthen the confidence of the students and preserve the sense of dynamic interaction with the instructors.

Interactive Techniques in Part One and Two

The pedagogic techniques employed in Part One and Part Two were primarily concerned with providing the students with a communication framework that was comfortable and repetitive to promote confidence. The self-introduction, the interactive instructions for the use of the technical equipment, and the conversation material of Part Two were all designed to give the students concrete expressions which they could employ without hesitation. Each phrase or expression contained the standard pattern and a possibility of creating individualized answers in a limited way so that the other participants could hear and understand easily

The self-introduction and "show and tell" sections were quite interesting and positive. To be on television was a new experience for most of the students, which made the class fun and exciting. In a short feed-back section after the self-intros and "show and tell", the other classrooms were quite co-operative in asking quentions of the speakers. The interactive sections showed the most promise for the teaching context.[5]

Programmed Learning in Part Three

In Part Three, true/false questions and multiple choice questions were used to test listening comprehension. CLOZE test and dictation materials were also prepared. The passage for dictation and the CLOZE sentences which required a student to write on the sketchboard took a long time and strained everyone's patience. To use these devices gives an illusion of productive practice, but actually they increased the distance already inherent in the system. The interactive, short questions and answers decreased the distance. After two sessions the CLOZE testing and dictation passages were discontinued.

The strategy for doing the true/false questions and multiple choice comprehension questions was to have large brightly colored cards in each classroom which the students would display to show their answers. The difficulty was co-ordinating the camera to take a picture and transmit it to the other classrooms. It took too long. In the end, we relied entirely on the telephone connection to communicate. Nevertheless, the true/false questions and multiple choice questions were short and easy to manage, so that we felt they were a positive and active method for the peculiarities of the technology. In this case, as in the interactive questions section, it was necessary in every case to call a member by name to give an answer. It is not functional to request a volunteer.

Performance of the Drama as Culminating Experience

Since we completed an entire section of the text, the drama entitled " An Eye to the Future", in four sessions, we used the last session as a culminating experience. Each classroom was assigned one or two segments of the film to dramatize. For this part, the Chiba students, the University of the Air's English Drama Circle, also prepared a dramatic presentation, memorizing the parts and preparing props. The mood for this final session was quite bright.

V. The Technical System

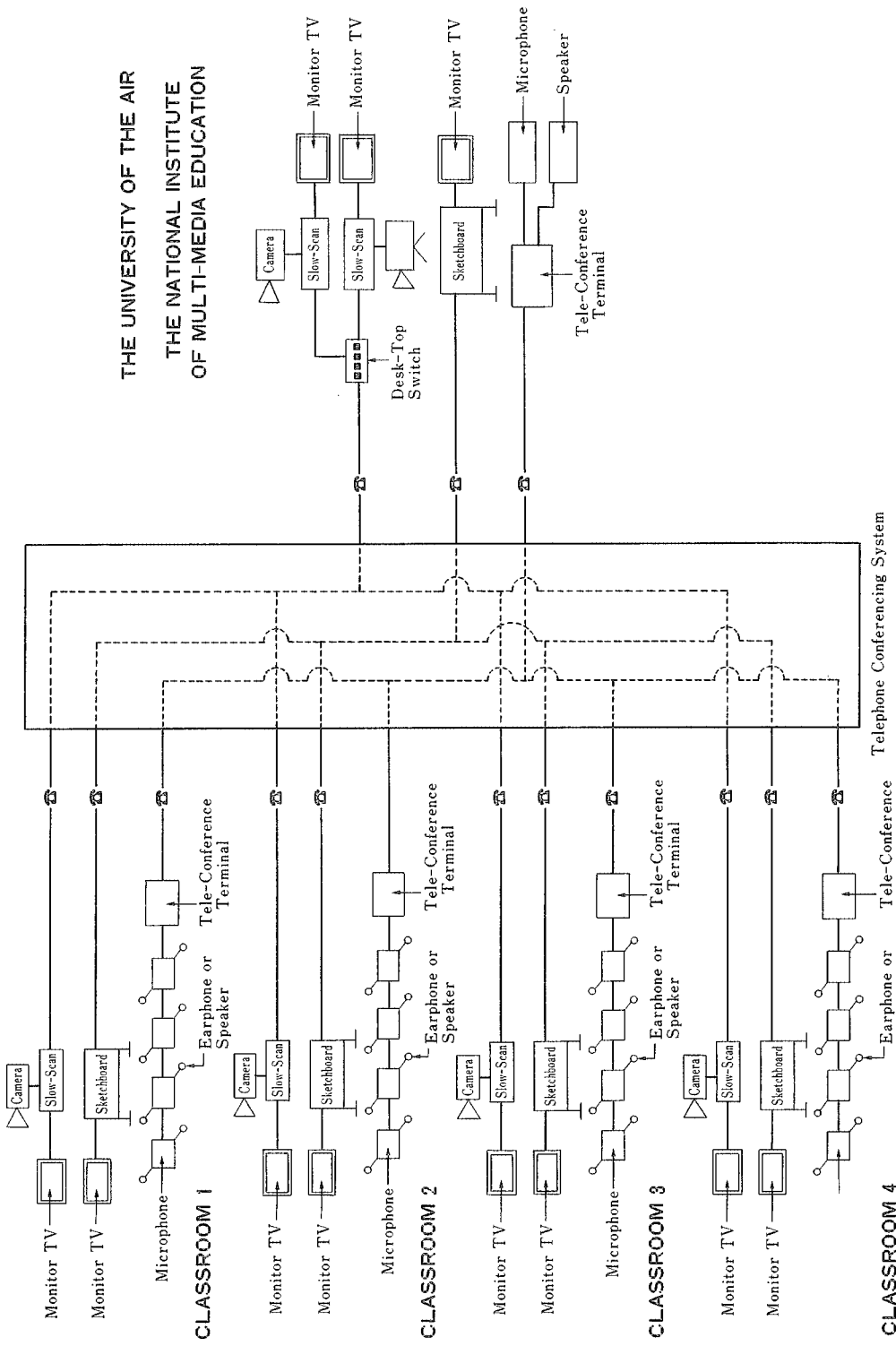
As shown in Figure 1, we used the telephone conferencing system, the electronic sketchboard, and the slow-scan TV monitoring system, each connected by a telephone line.

Telephone Conferencing System

Telephone conferencing does not use a heavy telephone. Large speakers are used in some classrooms so that all members can hear without individual equipment, whereas in other classrooms each student used an earphone. For transmission, a microphone (either free standing desk-top or portable clip-on) was necessary for each person who wished to speak. The technology enables people in several locations to listen and participate with a certain amount of naturalness

The technical problems with transmission involved occasional loss of contact, insufficient volume for understanding, low quality of sound and occasional noise on the wire. Another problem was that, in the case of desk-top microphones and earphones, we would lose vocal contact with a student using the electronic sketchboard, just at the time when such contact was most desirable. The human problems centered on the fact that the members' faces could not be seen.

Ultimately, the vocal telephone connection was the central tool and the basis for


THE UNIVERSITY OF THE AIR
THE NATIONAL INSTITUTE
OF MULTI-MEDIA EDUCATION
Monitor TV
Monitor TV
Microphone
Speaker
Camera
Slow-Scan
Sketchboard
Desk-Top Switch
Tele-Conference Terminal
Earphone or Speaker
Telephone Conferencing System
CLASSROOM 1
CLASSROOM 2
CLASSROOM 3
CLASSROOM 4

all of the interaction and course work.

Electronic Sketchboard

The electronic sketchboard is a standard sized classroom whiteboard with the feature that it transmits whatever is written on it via a television monitor to connected classrooms. Several colors can be used. An eraser can be used in each of the satellite classrooms only to erase material written by that classroom. The entire picture on the monitor can be erased by the switch on the board. There are three switches, and someone has to be sure the switch for "transmission" is in the "ON" position.

The board seemed to promise many possibilities for pedagogic purposes. We originally planned to use the electronic sketchboard more than we did. It operates in real time, copies can be made of what is written on it, and the writing on the board can be seen for as long as necessary.

What actually happened was that the board was used to take attendance. We quartered the board from Chiba and wrote the name of each classroom in each quarter. The students would then sign in. This was critical information and the best way to do it, for we needed precise information about who was present in order to facilitate the class. We tried using the sketchboard for dictation, but it took an excessive length of time, and corrections took even longer. We ended up using the board during the class session to clarify points that could not be made clear orally, to transmit information that was necessary for students to make an answer, and so on.

We did not make the best use of this technology and more work must be done to develop methods to use it, for it can be quite useful to have this visual, real time link for all of the classrooms. It is possible that the board might be more useful for classes other than English conversation. Yet, the primary use we made of the board was quite important to the smooth functioning of the class.

Slow-Scan TV

The slow-scan TV, a system containing a camera and TV moniter, connected by a telephone wire, shows a single still shot for 90 seconds. If no new shot is provided, the same shot will repeat until changed. A shot may be taken on cue or the camera can be put on automatic, to take shots at 90 second intervals. In the Chiba studio, an overhead camera positioned to photograph displays, pictures, etc. was also available and put to use. In order for a classroom to send a photograph, someone in that classroom must set the camera to transmit. If one classroom is sending a transmission, the other classrooms cannot. Only one classroom can transmit at a time. For this reason, verbal prompting was occasionally necessary to request either that a classroom send a picture or stop sending their picture.

Pedagogically, this piece of equipment was quite frustrating to use. The 90 second interval between still shots made the process seem less like being filmed and more like being photographed. Yet, the kind of habitual awareness of the camera that gives the viewer the impression of direct contact can be achieved only by treating the camera "as if" it were filming. One last problem was that it was difficult to coordinate the technical staff in the various classrooms to respond efficiently to requests for pictures.

The most successful use of the camera was certainly in the Part One section, self-introductions and "show and tell", because the camera was set to transmit from that classroom and the technician was ready. The students who introduced themselves could be seen at the same time that they were talking. When they introduced local products or showed pictures, the camera was ready.

Otherwise, this piece of equipment was not very functional. We used it on one occasion when the electronic sketchboard shut-down as the quickest method of transmitting the list of answers for the multiple choice quention. Its automatic repetitive function worked quite well in that case. So, it is possible to use the slow-scan TV to bridge gaps created by failure in the other equipment.

The most important increment of bonus was the fact that the students' faces could be seen. The ever present distance created by the technology could be partially bridged by creating a sense of the students (or instuctors') presence by visual means. Although we could not utilize the equipment precisely, there is no doubt that the continual broadcasting of human faces in the various classrooms was quite necessary to enhance the positive aspects of a potentially alienating context.

Additional Equipment

A VCR unit was provided for pretaped material for use during Part Three of the class session and for meetings of the class without instructors in the alternate weeks. Ideally, the video tape would be pre-set to the correct position before class began to avoid long minutes of delay.

Two TV monitors were necessary for the slow-scan camera, electronic sketchboard and the VCR unit. For this reason, an experienced technician was necessary to interface the various media smoothly.

In the Chiba studio there was also a side camera in a fixed position used to send pictures of teaching aids. A desk-top control switch gave the instructor the choice of which camera to send a picture from.

Technical Support Personnel

It is preferable to have a technical director/operator in each classroom to operate the camera, to help students to use the technology effectively and to trouble-shoot the

system's failures quickly and efficiently when they occur. There should be a direct communication line always open among the technical directors and between directors and the Chiba studio. Also, there should be a single integrative technical director at the studio whose job is to coordinate all the participants in the session, especially to minimize the burden of the instructors, who should be free to teach rather than trying to solve technical problems.

It is important for the instructors to establish clear communication with the technical personnel before the class starts so that they know what is needed and are ready to respond to cues efficiently in the classroom sessions.

VI. Psychologial Problems of the Students

Motivation

Students with rather weak motivation lost it. It was a free course with no commitment of money and no credit. Because of the lack of immediacy, it was difficult to involve all of the classrooms simultaneously. Without direct supervision, student with little motivation could easily lose concentration. In fact, any failure of the system or the instruction easily discouraged students, who then failed to return, because of the lack of direct contact with the instructor. They could feel no personal involvment in such an impersonal setup.

Personality

The psychological problems of uncertainty, shyness, etc. were approximately the same in the beginning as in an ordinary class. However, the intensity of these feelings seemed to increase because of the technical problems and the problems of distance from the instructors, which in turn increased alienation. Difficulty of understanding could not be corrected easily since there was no direct means of feed-back. Lacking feed-back made the process of correcting errors time consuming and imprecise. It was almost impossible to correct pronunciation because of the sound problems. When we responded to the students, requesting a repeat or asking a backup question, the students easily lost their confidence and fell silent. To maintain prolonged contact was stressfull.

Confidence

We want to emphasize that the confidence of students about the use of technology and the English language is essential to the optimal functioning of tele-schooling. To establish this confidence was a function of training the students in the beginning to the equipment and providing positive and clear experiences in using English. As the course progressed it seemed to us that many of our students became more confident

and thereby could enjoy more relaxed communication with us.

The Silence

A problem peculiar to this kind of distance education is prolonged silence. The silence could be caused because of technical problems or student uncertainty. How to know? Some training in the beginning seems to help by instructing the students to respond immediately with a "Yes" or to say "Pardon" or some other kinds of answers, such as "Could you speak more loudly", or "I don't understand". These seem to reduce the stress and the length of silence, but it does continue to be a problem.

We can summarize the psychological problems in terms of that silence. If students lack motivation or are shy and uncertain, lacking in confidence, there will be long, intolerable silences.

VII. Pedagogical Probems of the Teachers

In coping with this new technology, it is necessary for the instructors to do many other tasks other than just teaching. They must coordinate the use of the equipment, maintain contact with the various classrooms, facilitating interactive communication among the students and between students and teachers.

Physical and Psychological Burden

The physical and psychological burden of the instructor is much heavier than in a normal classroom. There is more stress caused mainly by compensating for the silence. Also, both talking to an impersonal camera and the intense effort to maintain contact with students we could not see create stress. To overcome these problems it is useful to visualize the situation in the distant classroom as if the students were sitting behind the lense of the camera.

There are other strategies which can help in reducing the burden for teachers. First, before the tele-schooling project begins, the teachers must work with the equipment in order to be familiar and comfortable with it. It is necessary to do a "dry-run" of class procedures, utilizing all of the equipment.

Also, the teachers need to make very detailed preparations in terms of time-frame as well as content. Part of our preparation was to prepare handouts for the students a week before each session so that they could see the plan of the class and the target language situations. We also prepared a general flow-chart for each class session with more material and activities than we expected to use. For in order to meet the contingency of unexpected breakdown of the system, we must prepare alternative plans.

Pedagogical Strategies

The greatest single problem was to find teaching devices that are suitable to this peculiar teaching situation. We used some rather standard techniques, such as true/false and multiple choice questions for text comprehension and dictation, which are effective although we had to repeat the verbal information more times to assure comprehension. The interactive techniques employed in the project were also effective, as mentioned above. In particular, the self-introductions and "show and tell" were good because it was a new experience for the students to be on TV. To speak a foreign language is, in a sense, to be an actor. TV experience is an effective means of creating this awareness.

What kind of methods are suited to the media? Not suited are long one-sided speeches by teachers without eliciting feed-back or providing pre-written cuing materials. Long dictation exercises are not suited because of the quality of the transmission. It strains everyone's patience to the maximum and it is very difficult to check the answers. On the other hand, to make teaching materials and questions that are too easy is also discouraging. In order to do this type of teaching effectively, it would be useful to have some kind of placement test to judge the level of the students' English ability, then to limit the number of classrooms. Four is clearly a maximum. Even four is rather stressful. Each new negative factor triples the amount of difficulty in management, detracting from the pedagogy and overburdening the teacher/student relations.

There are some fruitful possibilities. If the students in a classroom were to be given a problem or project that they have to work on together, it would increase the solidarity of the class group. The "show and tell" could be that sort of project. Since there is no direct instructor supervision, a lot of interactive helping could happen, which happens less in an ordinary classroom.

The use of these various media redefines the classroom. It should not be treated as a conventional classroom. Rather, some of the delightful possibilities of audio/visual media should be exploited. Eye-catching colors, over-size cards, exaggerated applause, and interval music can be used. We even asked one of the students to perform Flamenco guitar for us.

VIII. Conclusion

In conclusion, let us summarize the problems which became apparent through the Kumamoto Project and which point to further improvement in the system.

Technologically, the quality of the sound transmission is the most crucial point and requires significant improvement before this system can be considered viable. The speed of the transmission of slow-scan pictures is another problem. It would be

ideal to have a moving picture, but lacking that, our experience strongly suggests that speed should be faster, perhaps in the 5-10 second range. Needless to say, the technical system should be so arranged that all of the machines are convenient and easy to use. If it were possible to combine this system with the language laboratory, some of the above mentioned problems could be resolved.

The technology itself creates or intensifies some psychological problems for students in areas such as motivation, personality and confidence. Feelings of isolation and alienation due to the impersonal technical equipment create stress which is most evident when there is prolonged silence.

In the area of pedagogy, the tele-schooling system creates extra problems and burdens for the instructors. Types of problems to be dealt with are inexpertise with the equipment which is solved by practice and the necessity of a detailed class syllabus and contingency strategies, resolved by planning. The effort required to bridge the gap between Chiba and Kumamoto by interacting with invisible students and coping with silence is intense. The skilled assistance of trained technical staff members can ease this stress.

In spite of all the current difficulties, the project proved to be challenging and interesting for both students and teachers. Future improvements in the technical system, the training of personnel, both technicians and instructors, and experience with syllabus design promise that tele-schooling may be a viable alternative to direct teaching.

APPENDIX A : Sample of Handout

KUMAMOTO PROJECT

〈4〉 SEPTEMBER 7, 1988

PART I : YATSUSHIRO DAY

SELF INTRODUCTIONS & SHOW AND TELL

Mr. Hariu Ms. Nakayama Ms. Aoshima Ms. Sato
Ms. Tanaka Mr. Motosugi Mr. Masuzumi Ms. Kataoka
Ms. Tsuchimori Ms. Matsumoto Ms. Satani
//Next Week : Ichinomiya Day//

PART II : CREATIVE ENGLISH COMMUNICATION

"STARTING A CONVERSATION"

LEADING QUESTIONS :

〈PAST〉	〈FUTURE〉
Did you do anything interesting	What are you going to do
last weekend?	for the long weekend?
during the holidays?	for your summer vacation?
for Golden Week?	on your day off?

THE ANSWER :

Tell about your doings or your plans.

KEEP THE BALL ROLLING :	BOUNCE THE BALL BACK :
Oh, really? Who did you go with?	What about you?
That sounds like fun... How was the weather?... Was there a good tennis court?...	How about you?
	Tell me about your trip.

PART III : AN EYE TO THE FUTURE (Vol. 22 and 23)

TRUE/FALSE QUESTIONS

MULTIPLE CHOICE QUESTIONS

1. a. Doug wanted her to.
   b. It was not interesting at all.
   c. She was offered a much better job.
2. a. to talk about her problem.
   b. to talk about his job.
   c. to give her a present.
3. a. very busy when Kate dropped in.
   b. angry because Kate interrupted him.

c. willing to listen to Kate play the piano.

4. a. she was angry at Professor Stiles.
   b. she was very nervous about going to school.
   c. she did not want to talk to Doug.

APPENDIX B : Sample of Protocol

KUMAMOTO PROJECT

JULY 27

HOW TO RESPOND TO INSTRUCTIONS

1. Whenever your name is called, please respond by saying :
   a. "Yes"
   b. "Here"
   c. "Present"
   note : If the instructor calls a member who is absent, would everyone please say, "Absent" in chorus?
2. When you are asked a question by the instructor, please respond with :
   a. THE ANSWER
   b. When you do not understand the question, say :
      i. I can't hear you. Please repeat the question./One more time, please.
      ii. Pardon me. I do not understand your question. (cue to rephrase the question.)
   c. When you want time to think about the answer, please say :
      i. Just a moment please.
      ii. Excuse me. I'm thinking.
   d. When you don't know the answer after all,* please say :
      i. I don't know.
      ii. Pass.
      * Please try choice "b" or "c" before you choose "d".
3. When you have problems, please say something. Do not hesitate to stop the class if you have problems, questions and requests. Use the following phrasses :
   a. i. Excuse me, please.
      ii. Pardon me.
      iii. I am sorry to interrupt.
   b. This is (name) of (classroom) AND
   c. One of the following :
      i. I can't hear you.
      ii. We can't get the picture.

iii. The picture is not clear.
iv. Please speak more loudly
more slowly
more clearly. AND

d. Thank you.

REMINDER : PLEASE REMEMBER TO SPEAK LOUDLY AND CLEARLY, CLOSE TO THE MICROPHONE. DON'T BE AFRAID OF MAKING MISTAKES.

Notes

1) For a comparative report of the projects of 1986 and 1987, see Shigeru Wakamatsu. *et.al.*, "Teaching at Distance Through Teleconference with Electronic Writing Board and Slow-scan Technology" in *Shingakugiho, Vol. 88, No. 115* (Denshin Joho Tshushin Gakkai Gijutsu Kenkyu Hokoku), pp. 7-12.
2) The National Institute of Muti-Media Education is located on the same campus with the University of the Air. One of the purposes of the Institute is to assist the University of the Air in creating educational programs and to conduct research concerning the various problems of new media employed by the University.
3) The rigor of this schedule forced the students to share hours of difficult material. The solidarity of the group which developed as a result of this was an unexpected bonus.
4) See Appendix B.
5) Interviews, along with written evaluation by the students indicated the most positive response to any of the pedagogic strategies. For the results of the interviews and the questionaires, see Sigeru Wakamatsu, *et. al.*, "Teaching at Distance Through Teleconference with Electronic Writing Board and Slowscan Technology", *op. cit.* and Sigeru Wakamatsu, "Experimental Study of Schooling at a Distance through Teleconference System" in The 10th Anniversary Volume of the National Institute of Multi-Media Education (1988), pp. 127-129.
6) About the manufacturers of the equipment, see Sigeru Wakamatsu *et. al.*, "Teaching at Distance Through Teleconference with Electronic Writing Board and Slowscan Technology", *op. cit.* The total price of equipment was approximately ¥ 4,500,000 per classroom, and the operation cost (i.e., telephone charge) was approximately ¥ 45,000 per classroom/ per class session.

(昭和 63 年 12 月 23 日受理)