

A Pilot Study on Computer-Assisted Pronunciation Teaching

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Introduction

The present study reports on the first of a series of studies designed to improve the teaching and learning of English pronunciation at Miyazaki Municipal University. The use of visual information to raise learner awareness of articulatory settings in conjunction with kinaesthetic and discourse-level pronunciation practice activities is discussed, and suggestions for further studies on the methodology of L2 pronunciation teaching are made.

Background information

From the 1940s through the 1950s and 1960s, pronunciation skills were considered a fundamental building block for students of foreign languages (Brown, 1991; Morley, 1987, 1991, 1994). Teaching was based on the contrastive analysis of differences between the native language and target language and on behaviorist theories of psychology and education. Students were expected to master second language(L2) phonology by imitating native speaker models - in the classroom or on tape - and native speaker-like perfection was the expected outcome of adequate practice effort and successful habit formation(Riney and Anderson-Hsieh, 1993). The results were disappointing for students and teachers alike, and with the onset of the communicative revolution, pronunciation was temporarily abandoned by many ELT professionals and in many programs (Brown, 1991; Morley,1991). Since the 1980s, a number of professionals in the field have investigated the role of pronunciation in the ELT curriculum. Applying insights gained from second language acquisition research, these efforts have focused on the integration of pronunciation teaching and learning into the communicative curriculum, with a shift towards overall intelligibility as the primary goal of pronunciation teaching and learning.¹

The new approach to pronunciation teaching derives at least in part from the recognition of learner needs, particularly in ESL settings. The globalization of the economy and education, combined with rapidly changing patterns in emigration to English speaking countries has meant that there is now a large pool of foreign born graduate students and business people in addition to refugee and immigrant populations for whom adequate communication skills in English are essential(Wong,1986; Morley, 1987, 1988, 1991, 1994; Anderson-Hsieh,1989; Celce-Murcia and Goodwin,1991). The general points of agreement among advocates of the new approach include:

- Intelligibility, rather than native-speaker accuracy, is considered the primary goal of pronunciation training, with a primary focus on higher level features such as suprasegmentals(or prosody), and overall voice quality features.
- Renewed emphasis on listening, in recognition of the fundamental importance of the the perception - production relationship in L2 learning and acquisition.

- Focus on the learner: acceptance of the importance of individual differences among learners and of each particular learner, his or her cultural background, prior education, needs, etc.
- Focus on the importance of accurate assessment of learner needs, the reciprocal agreement on instructional goals by learners and teachers, and the fundamental importance of learner motivation for success.
- Expanded sense of the domain of pronunciation, now seen as informing grammar, sound-spelling correspondences, and the pragmatic, socio-linguistic, and para-linguistic aspects of L2 communication.

This new approach to pronunciation teaching has undoubtedly had its greatest effect in ESL settings. It has been a force behind the creation of integrated programs such as the University of Michigan's (Morley, 1994), and efforts to develop innovative approaches to the task of accent modification (Anderson-Hsieh, 1990; Schwartz, 1995). As in many EFL settings, the situation in Japan differs fundamentally from that of the ESL environment.

Teaching pronunciation to Japanese university students is complicated by a web of related cultural, institutional and linguistic factors. These include the socialization process in Japanese schools (Anderson, 1993), the time allotted to speech and pronunciation in the English curriculum, the continuing importance of the entrance examination system over that curriculum, Japanese students' experiences as language learners operating within those social and institutional constraints, and finally, the fundamental differences between the English and Japanese sound systems (Celce-Murcia and Goodwin, 1991). In a survey of descriptions of the Japanese pronunciation of English (JPE, henceforth), Riney and Anderson-Hsieh (1993) note that despite the widespread developments in pronunciation pedagogy in the last twenty-five years, pronunciation teaching in Japan remains based on articulatory phonetics and contrastive analysis. Most EFL textbooks explicitly directed to the teaching of pronunciation to Japanese learners remain essentially behaviorist in approach (Riney and Anderson-Hsieh, 1993). Examples include Grate's English Pronunciation Exercises for Japanese Students (1974) and Dale and Poms' English Pronunciation for Japanese Speakers (1994). Both texts emphasize the development of habit formation through the imitation and practice of phonemes. Riney and Anderson-Hsieh conclude their survey of JPE by urging that researchers and teachers pay greater attention to describing the pronunciation characteristics of learners, and by suggesting a tentative list of teaching areas to be addressed. These include: (1) focus on suprasegmental problems: stress, rhythm and intonation; (2) articulatory settings problems such as lip rounding; (3) Japanese phonological processes transferred into English, such as epenthesis and palatization; (4) the most problematic segmentals and contrasts; (5) initial and final clusters; (6) linking and reduction strategies for fluency; (7) problems related to Japanese or English orthographies. These suggestions, although useful, will be difficult to apply in most existing programs in Japan due to lack of available resources and other institutional constraints including: (1) inadequate contact hours for students; and (2) the necessity of developing new materials and new approaches to teacher training in "applied phonetics"² for communicative pronunciation training.

Despite the difficulties, there are reasons to be hopeful about possible future developments, particularly in the integration of audio-visual information and feedback into the teaching of pronunciation. Lambacher (1995) discusses the use of acoustic-data to enhance pronunciation of the nasals [m] and [n], and Matsui (1995) reports "dramatic" improvements in lip-rounding by Japanese learners of English using

video in conjunction with detailed descriptions of the articulatory settings for the target [w]. Todaka(1995) discusses a “HyperTraining Method” of focusing learner awareness on voice quality differences between Japanese and English, and regular discussions with Ms. Ryoko Nakatsu (personal communication, 1995) also support the importance of integrating awareness of phonological parameters with discourse level speech and communication practice.

The objectives, methods, and results of the study are discussed below.

Objectives

The broad purpose of the study was to gain perspectives on improving the teaching and learning of English pronunciation for Japanese university students. Our immediate goal was to examine the effectiveness of commercially produced instructional software for English pronunciation. Specifically, we wanted to examine the results of using a multi-media personal computer to display visual information on the articulatory settings for specified target sounds. The computer-based visual information on CD-ROM was used in support of a multi-level approach to teaching, in accordance with the suggestions in Morley(1994) that micro and macro level approaches to pronunciation features be integrated.

Methods

Volunteers were recruited from a pool of fifty first-year students being taught by Professor Todaka. A total of fourteen students volunteered to participate in the study. One second-year student was given special permission to join the group, at her request, for a total of fifteen participants (13 female and 2 male). All the participants were asked to read a diagnostic passage made by Prator and Robinett (1985, p. ix) twice: (1) before and (2) after the sessions. All the readings were recorded on a blank tape and were rated by three raters (two Japanese and one American). All the raters are teachers at Miyazaki Municipal University, and have taught English pronunciation classes. They also have sufficient knowledge of phonetics. The check list of problems was designed following Prator and Robinett(1985) and Firth(1992).

Each rater listened to the subjects’ readings several times, and made his comments on the check list. Before the actual ratings, the raters sat together practicing their assessment several times using an example reading, and made sure that a general consensus among them was reached. The actual ratings were done individually.

Based upon the pre-instructional ratings (i.e., subjects’ readings before the sessions), problematic features were selected, and were taught in the sessions. The selection procedures were based upon the following criteria: (1) features that were agreed by all the raters; and (2) features that were common to the subjects. In other words, the rating results for each subject were compared and those features that all the raters agreed upon for each subject were selected. All the selected features were then compared across the subjects, and the problematic features selected by the first criterion were ranked in accordance with the number of the subjects who made that particular mistake. For instance, if all the subjects made a mistake in producing a high front lax vowel, [ɪ] the vowel was ranked first. Those mistakes that were made by only one subject were ranked last. Those features that were shared by at least two subjects were taught in the sessions based upon the pedagogical outline mentioned earlier.

The post-instructional readings were rated similarly by the same raters, but this time only those features that were selected by the above procedures were evaluated. The subjects’ progress was assessed qualitatively. The rating results were compared among the raters for each subject for each selected feature. The subject’s progress was based upon the raters’ consensus. The decision was, therefore, based upon the

raters' perception of the subjects' performance as more or less target-like, in terms of the number of the raters that agreed. Furthermore, we decided to accept the results as progress when two of the three raters agreed that the selected features in the post-reading for each subject were more target-like for this pilot study. Once the above procedures were done, the results for all the subjects were then compared.

A questionnaire was given at the time of the post-assessment recordings asking the participants the following three questions: (1) what did you learn in the sessions?; (2) Did you practice at home? If so, what and how?; and (3) What did you think about the sessions?

The subjects were randomly divided into two groups to receive slightly modified versions of the same lesson in consecutive sessions. Lesson plans were based on material and suggestions in Avery and Ehrlich (1992), Dauer (1994) and Gilbert (1993), based on the instructors' judgment that the materials met the pedagogical requirements of the study in integrating instruction in higher level features with acceptable communicative practice models. Computer visuals from *Quick English* (1994) and *Pronunciation Plus* (1994) used to supplement the lessons for the second group. Both groups were taught by the same native speaker instructor in the same classroom. Since it was not possible to use expensive equipment such as a sonagraph using a visi-pitch program to teach the suprasegmentals, we decided to draw intonational contours on the board to show the patterns. The intonational contours we used were based upon Prator and Robinett's (1972) system.

The pilot study was designed to last twelve sessions in order to replicate the actual conditions under which the conversation classes at MMU are taught: one ninety minute session a week for one thirteen week semester, with the final session devoted to the final examination. We decided to allocate thirty minutes to each session, approximating - with a few minutes for getting started and ending the sessions - the twenty minutes likely to be available for explicit pronunciation practice in the regular conversation classes.

Pedagogical concept

As mentioned above, various studies on pronunciation teaching suggest that an overall settings approach to L2 pronunciation learning holds the most promise for learners (Esling and Wong, 1983; Collins and Mees, 1995; Todaka, 1995). In other words, the articulatory settings of the target language need to be taught first because the overall maneuvering of the speech production organs are said to be different (Honikman, 1964), and that the imposition of the mother tongue settings on L2 settings may make the acquisition of the target sounds difficult (Esling and Wong, 1985). Therefore, we decided to focus upon the setting differences between L1 and L2 first, with other features (i.e., segmentals and suprasegmentals) taught in sequence. In addition, we adopted a multi-level approach (i.e., from the most local-level, word-level, to discourse-level) to pronunciation teaching for the reasons mentioned above.

A Macintosh computer connected to a video converter for use with the LL projection system was used to provide visual reinforcement for segmental features for Group 2 students during sessions 3 - 8 of the study. Worksheets and other materials were otherwise identical for both groups. During the latter half of the pilot study, when the suprasegmental or prosodic features of English pronunciation were emphasized, the commercially prepared software was not used. Pair practice of dialogs, information gap and spelling exercises were used extensively. In addition, kinaesthetic techniques designed to aid awareness and improve retention of English sound system characteristics were introduced. These included the tapping of rhythm, counting of syllables and the use of heavy rubber bands to demonstrate vowel lengthening, Gilbert(1983, 1992), and the use of movement and dramatic gestures as described by Acton (1984). These methods were used on the basis of results described by Todaka (1995), the previous

classroom experiences of the instructor, and the decision to maintain an approach consistent with that of the regular conversation classes at MMU. In general, instruction was teacher-fronted. New materials were presented to the class, modeled by the teacher, or in the case of Group 2, by the instructional software. After modeling, choral repetition practice and the clarification of difficulties, the bulk of each session was devoted to pair work. The first two sessions were devoted to a brief description of English and Japanese sound system differences and the instructional methods to be used, and warm up exercises designed to create a relaxed and supportive atmosphere. Practice exercises from Avery and Ehrlich (1993) and Dauer (1994) emphasizing the importance of learner awareness of articulatory settings and voice quality features were introduced. The instructor's primary goal in these first sessions was to improve learner awareness of fundamental speech dynamics with an emphasis on understanding differences in loudness and tone of voice in addition to techniques of whispering and using the body to project the voice. For further detail on instructional procedures, please consult the lesson plans for 30 January, 1995 in Appendix 2.

Assessment of the pre-instructional readings

The following features were found to be problematic for our participants based upon the rating criteria mentioned earlier.

(a) articulatory features:

- (1) not enough aspiration noises in the production of stops when necessary
- (2) not enough frication noises in the production of fricatives
- (3) breathy voice used by some of the female subjects

(b) segmental features:

- (1) vowels - /ɪ /, /ʌ /, /æ /, /ɔ /, /ou /, /u /, /ε /
- (2) consonants - /l /, /r /, /θ /, /ð /, /n /, /s /, /ʒ /, /j /, /z /

(c) suprasegmental features:

- (1) too many pauses
- (2) no vowel reductions when necessary
- (3) flat intonational contours
- (4) no knowledge of intonational contours

Note: The errors found in the areas of articulatory and the suprasegmental features have also been reported previously (Sugito and Fujisaki, 1984; Todaka, 1995).

Almost all the segmental errors were due to the substitution of Japanese sounds to English equivalents.

The above features were taught in the twelve-week sessions following the instructional procedures developed under the guidance of the pedagogical concept mentioned earlier.

Results

No significant difference between the two groups was observed nor was there any improvement of particular phonological features in any of the subjects, though the raters judged a slight general improvement in rhythm and intonation.

See **Table 1**⁴ for the results of the post-instruction assessment.

As a whole, the intonational aspect of the suprasegmentals was judged to be more target-like (i.e., six out of ten subjects-- subjects 1, 4, 6, 8, 9, and 10), but no other consistent improvement across the subjects was found. It means that the segmental features were found to be more problematic for the participants than the suprasegmental features. In fact, only one subject (i.e., subject 1) was judged to have improved the segmental aspect of pronunciation. In addition, four subjects (i.e., subjects 2, 3, 5, and 7) were judged to have made no apparent improvement on any aspect of their L2 pronunciation.

Of six subjects who were rated to have made some improvement on the suprasegmentals, four of the subjects were in group 2. Furthermore, only one in group 2, compared to three out of six subjects (50%), was rated to have made no apparent improvement. On the other hand, no apparent difference concerning the segmental production was found between the subjects in group 1 and group 2, however. As mentioned earlier, the subjects in group 2 were given pertinent visual information about the articulatory gestures for the production of segmental sounds. It implies that the visual information provided by a computer had no apparent effect upon their production of segmental sounds.

Concerning the articulatory features (i.e., voice quality features) of the target language, no apparent progress on their performance was found in the present pilot study. However, a very interesting result was obtained from the questionnaire given at the time of the post-instructional recordings. The subjects' responses to the questionnaire are given below.

Table 2: subjects' responses to questionnaire

1

- (1) learned the articulatory gestures appropriate for the target language.
- (2) no practice
- (3) needed much more time to absorb what was taught in class.

2

- (1) learned the articulatory gestures appropriate for the target language.
- (2) no practice
- (3) learned a lot about the ways to improve pronunciation.

3

- (1) learned the articulatory gestures appropriate for the target language.
- (2) read the materials aloud two or three times at home.
- (3) needed much more time to absorb what was taught in class.

4

- (1) learned the articulatory gestures appropriate for the target language.
- (2) read the materials aloud every day at home/ practice the production of phonemes at home using a mirror.
- (3) though learned the articulatory gestures, it might have been better if the subject could have used a mirror to reinforce what she learned in class.

5

- (1) learned how to pronounce /r/.
- (2) read the materials aloud once at home.
- (3) wished the instructor had spent more time on individual practice.

6

- (1) learned the articulatory gestures appropriate for the target language.
- (2) read the materials aloud at home everyday.
- (3) learned the phonemic differences between Japanese and sounds.

7

- (1) learned the importance of stop aspiration, and linking/ vowel reduction.
- (2) read the materials two or three times at home.
- (3) the visual information provided by the computer helped a lot to understand the production of English sounds.

8

- (1) learned the articulatory gestures appropriate for the target language, the use of pitch to express different meanings, and rhythm.
- (2) read the materials aloud every day at home.
- (3) the visual information provided by the computer helped a lot to understand the production of English sounds, but wished more sessions were given.

9

- (1) learned the articulatory gestures appropriate for the target language.
- (2) practice the production of different frication noises several times.
- (3) became much more interested in English. the visual information provided by the computer helped a lot to understand the production of English sounds.

10

- (1) learned the articulatory gestures appropriate for the target language and the importance of the suprasegmental features .
- (2) practice the production of different English sounds everyday.
- (3) the visual information provided by the computer helped a lot to understand the production of English sounds; became much more interested in English.

An interesting finding is that all the subjects except subject 5 reported that they learned the articulatory gestures appropriate for the target language. Subject 5 reported that she learned how to pronounce /r/. It implies that there is a striking discrepancy between their perception of learning and the raters' perception of performance. All the subjects were rated not to have made any apparent improvement on the articulatory features (i.e., voice quality) of the target language, and subject 5 was rated not to have made any progress on the production of /r/ sound as mentioned above. Furthermore, it is interesting to note that all the subjects in group 2 indicated that the visual information provided by a computer helped them understand the production of target sounds. This point also contradicts the raters'

perception of the subjects' performance since none of the subjects in group 2 were rated to have made any progress on the segmentals.

Another finding is that those subjects (i.e., subjects 2, 3, 5, 7) who were rated not to have made any progress on their L2 pronunciation did not practice as much as the rest of the subjects (except subject 1). Subject 5 only practiced once while subjects 3 and 7 practiced only two or three times at home. Subject 2 did not practice at all. The other subjects practiced almost everyday at home though subject 1, rated to have made improvement on the intonation aspect, did not practice at all.

As seen above, there are significant differences between the subjects' perception of learning and the raters' perception of the subjects' performance. However, a close examination can reveal that this disagreement between the subjects and the raters is, in fact, a crucial factor to our understanding of L2 pronunciation teaching/learning. We argue that the computer-assisted L2 pronunciation teaching is, in fact, effective provided that certain care be taken. Our interpretation of the data is given in the next section with some suggestions for L2 pronunciation teaching.

Discussion

The most interesting finding in the study is the discrepancy between the subjects' perception of their own learning and the raters' perception of subject performance.

- Subjects' point of view
 1. all subjects except no. 5 reported that they had learned articulatory settings appropriate to the target language
 2. subject no. 5 reported that she had learned how to pronounce /r/
 3. all subjects in group two reported that visuals from the CALL software helped them to understand the production of target sounds
- Raters' point of view
 1. no subjects were judged to have made improvement in articulatory features
 2. subject no. 5 was not judged to have made progress in the production of /r/
 3. none of the members of group two were rated to have made any progress in the production of targeted segmental sounds

This discrepancy may be accounted for by the notion of the "learning process". It has been noted (Macdonald, Yule and Powers, 1994) that learners go through various learning stages before making any lasting improvement. When a learner participates in an instructional event, his or her existing L2 capabilities are disrupted, generally leading to a less stable performance, with an increase of non-target-like forms, before improvement. Thus, deterioration or no apparent improvement in performance may be a sign of the learning process at work, rather than a failure of the instructional procedure. Positive effects may still appear at a later time. Though admittedly speculative, it is quite possible that the discrepancy between the raters' and the subjects' views existed because the subjects were in the middle of an appropriate learning experience, and that they simply needed more time to make the transition from reception to production. It should also be noted that four of the subjects reported in their responses to the questionnaire that they needed more time to absorb the lesson material and/or wanted more opportunities for practice.

Another interesting finding revealed in the questionnaire is that the subjects who practiced most

at home - with the exception of subject no. 1 who did not practice at all - were rated as having made the most improvement.

In trying to understand and come to terms with the results of the study and what they might suggest for both practical classroom practice and future research directions, recent literature on the "new wave" in pronunciation teaching, including recent trends in L2 phonology and some general reflections on the uses of CALL/CAI may be of assistance. In a recent article discussing current research in L2 phonology, Pennington, (1994) notes that the themes currently under investigation are "partially autonomous and partially overlapping". This descriptor is useful not only in coping with the mysteries of L2 acquisition:

- 1) the relationship between perception and production;
- 2) individual learners differences; and
- 3) sociocultural factors and the influence of particular learning environments;

but is also useful in thinking about our roles as teachers and how we interact with learners.

The subjects' responses to the post-instructional questionnaire suggest that the following aspects be evaluated and further refined.

- Emphasize global properties of the L2 phonological features
- Create a supportive environment
- Make use of visual and kinaesthetic material
- Provide opportunities for communicative activities
- Increase the amount and intensity of exposure and practice time for learners

These aspects of a pronunciation curriculum will be taken into account in phase 2 of our studies.

Conclusion

In reflecting on the results of the study and determining what conclusions if any can be drawn from those results, several observations should be considered in the design of the follow-up study, scheduled for the first six months of 1996. The limitations of the present study include: (1) the limited duration of the project; (2) the lack of opportunity for subjects to use CALL materials for self-study; (3) limitations of the method of assessment sampling; and, (4) the need for objective measures of assessment. The authors propose to address the aforementioned limitations in the following ways. Our phase two study will be a longitudinal study of six months duration. Subjects will be assessed at the beginning and end of the instructional period, and at monthly intervals. Target sounds in selected lexical phrases will be analyzed on the Macintosh computer using *Signalize 3.12* from InfoSignal, Inc. (Eric Keller, 1995). The self-study language lab at MMU is now equipped with four Macintosh LC 588 multimedia computers. These will be made available for the subjects to review and practice material covered in regular sessions. *Signalize 3.12* will also be used to provide visual feedback to subjects in teaching the target L2 phonological features.

Notes

1. Many of the seminal papers on the current theory and practice of pronunciation teaching can be found in three collections: *Current Perspectives on Pronunciation* (Morley, 1987), *Teaching English Pronunciation* (Brown, 1991) and *Pronunciation Pedagogy and Theory* (Morley, 1994).

2. See in particular John C. Catford's "Phonetics and The Teaching of Pronunciation", in Morley(1987).

3. One subject dropped out of the study after the third week and four subjects were unable to participate in the post-instructional assessment after the final sessions due to colds, therefore, the results presented here were based on the results of ten subjects.

4. Table 1: results of post-instructional assessment

raters/ subjects	1	2	3	
	1 (1)	-thought group/ intonation -pitch range wider -segmentals in general -clusters clearer	-intonation -pitch range wider -segmentals /ð/, /ʌ/	-intonation -rhythm /stress -consonants in general
	2 (1)	-intonation	-----	-----
	3 (1)	-intonation	-----	-----
	4 (1)	-intonation	-intonation	-rhythm
	5 (1)	-----	-----	-----
	6 (1)	-intonation	-intonation	-intonation
	7 (2)	-intonation	-----	-----
	8 (2)	-intonation	-intonation	-----
	9 (2)	-intonation	-intonation	-----
	10 (2)	-----	-intonation -rhythm -segmentals /ð/	-intonation

Note: ----- indicates that the subject was rated not to have made any improvement. In addition, () denotes the participant's group number. 1 indicates the subject was in group 1, whereas 2 indicates that the participant was in group 2.

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Appendix 1: Diagnostic Passage and Evaluation

DIAGNOSTIC PASSAGE

(1) When a student from another country comes to study in the United States, he has to find the answers to many questions, and he has many problems to think about. (2) Where should he live? (3) Would it be better if he looked for a private room off campus or if he stayed in a dormitory? (4) Should he spend all of his time just studying? Shouldn't he try to take advantage of the many social and cultural activities which are offered? (6) At first it is not easy for him to be casual in dress, informal in manner, and confident in speech. (7) Little by little he learns what kind of clothing is usually worn here to be casually dressed for classes. (8) He also learns to choose the language and customs which are appropriate for informal situations. (9) Finally he begins to feel sure of himself. (10) But let me tell you, my friend, this long-awaited feeling doesn't develop suddenly--does it? (11) All of this takes practice.

STUDENT DIAGNOSTIC PROFILE

Background

Name:

Age:

Native language:

Frequency of use of English:

Diagnostic test score: Introd. Intermed. Advanced

General speaking habits (five-point scale)

a. Clarity: very intelligible -- -- -- -- -- unintelligible

b. Speed: very fast -- -- -- -- -- very slow

c. Loudness: easily heard -- -- -- -- -- difficult to hear

d. Breath groups: too many -- -- -- -- -- not enough pauses

e. Voice: pitch range too narrow? voice too nasal?

f other comments:

Clarity: Is the student's speech muffled because she speaks with a hand covering the mouth? Because the head is held down? Because posture is bad.

Speed: Does the student speak too quickly? Does inaccurate articulation become incomprehensible because the student speaks too quickly?

Loudness: Does the student speak too softly? Does a lack of volume combined with non-standard pronunciation diminish comprehensibility?

Breath groups: Does the student speak with appropriate pauses?

Voice: Is the student voice unnaturally high or nasal? Too breath or monotonous because of too little variation in pitch?

Others: gestures and expressiveness etc.

A CHECK LIST FOR THE DIAGNOSTIC PASSAGE

1. STRESS AND RHYTHM

- A. multi-syllable words - primary and secondary stress
e.x. drugstore
- B. sentence stress - unnatural
e.x. content words are stressed while function words are not
- C. thought groups - unnatural
e.x. When the wind blows/the waves run high.
- D. pauses - unnatural (i.e., too many)
e.x. the same as above
- E. rhythm - unnatural
e.x. Dogs eat bones/ The dogs will eat the bones
- F. durational differences - stressed/non-stressed vowels

2. INTONATION

- A. statements - unnatural.
e.x. The coffee is hot.
- B. Wh-questions - unnatural
- C. Yes/No questions - unnatural
- D. Choice questions - unnatural
- E. Addressing - unnatural
e.x. My friend, I'm glad to see you.
- F. Tag-questions - unnatural
- G. Lists - unnatural
e.x. I ate one apple, one orange,.... and ...
- H. pitch ranges

Appendix 2

Lesson plans for 30 January, 1995. The lesson focused specifically on /l/ and /r/, and clusters in which these phonemes are frequently problematic for Japanese learners.

Group 1

1. greetings, warm-up free conversation
2. description of lesson focus: awareness and production of target sounds:
 - a. tongue placement
 - b. tongue movement between articulatory settings
 - c. discussion with students of sound system differences: elicit awareness of Japanese /r/ and English /r/differences
3. Listening practice:
 - 1) minimal pairs. Students circled one of two choices

