

[Original Paper]

## A place for explicit phonological instruction

Alan Knowles<sup>1)</sup>

### Abstract

For most learners, acquiring native-like competence in a foreign language is a difficult task. There is a vast literature on language acquisition, first language acquisition and second language acquisition, and among those factors which will have a bearing on success we may wish to include first language, age, experience, aptitude, motivation, attitude, and other psychological and socio-cultural factors. I shall look here at just a small but significant corner of this complexity, a small piece of the jig-saw puzzle. I shall limit the scope of study by considering particularly our situation at AUHW and I shall be mostly concerned with oral communication, focussing especially on a small number of phonological segments, individual sounds. I shall consider the justification for explicit teaching of phonological detail and the extent to which we have been able to change the language behaviour of our students in relation to target sounds.

(J.Aomori Univ.Health Welf.3(2):127–134, 2001)

Keywords: Competence, language acquisition, first language, second language, phonological segments

### Background

When we teach any course we must set realistic goals which we can reasonably hope to achieve within the time available. We have to recognise that for many of our students, native-like competence in English is not a realistic goal. Communicative competence, the ability to communicate with other speakers of English, is a more limited but a more achievable goal. Let me be clear on this point. I am not suggesting that we should set our sights low. Native-like competence should always be our ideal and something that we should strive towards, but in setting goals we must always have in mind how success or failure will be measured, and we have to begin with a high expectation of success.

There are those (e.g. Scovel 1969, 1988) who would claim biological reasons for the fact that beyond a certain 'critical period', often estimated as somewhere between the ages of 5 and 12, it becomes impossible to acquire native-like competence in a foreign language, particularly in the phonological aspects of a language. This hypothesis, promising pre-determined failure for the majority of language learners, is poten-

tially very damaging. Motivation, attitude and expectation of success are important to any learning process, and neither the teacher nor the language learner can afford to be resigned to the expectation of failure.

We have to bear in mind firstly that native-like competence is not our primary goal, and secondly that the critical period hypothesis is not proven to the satisfaction of all (see for example Singleton 1989, Pennington 1996, p.7). Most research does indeed suggest that children acquire new language more readily than adults, but the explanation is not necessarily primarily biological. Children and adults differ in many respects, and we must look for ways to minimise the impact of these differences for the adult learner. Celce-Murcia et al. (1996, pp 15-16) give a useful overview of the complexity of the issues.

Assuming that our goal is communicative competence, and that there are no theoretical reasons biological or otherwise why this should not be achieved, we must identify the obstacles which stand in the way of this goal and propose strategies for removing them.

---

1) Division of Human Sciences, Faculty of Health Sciences, Aomori University of Health and Welfare

Our students differ from one another in many respects. They come from many different backgrounds, different areas, different schools, and they will have had different experiences of learning English. Their motivation and expectations will vary. There is one important factor which they have in common though - they almost all speak Japanese as a first language.

First language interference, sometimes referred to as ‘negative transfer’, is particularly significant in the acquisition of phonological competence. Very few bilinguals achieve perfect competence in both languages, even those who have grown up with two languages from the earliest age. Features of one language may be transferred, inappropriately, to the other language. This may involve grammatical structures, vocabulary, idioms, but the phenomenon is perhaps most marked in the transference of sounds from one language to another. It is striking that speakers of one language exhibit systematic pronunciation errors as they learn to speak another language. The sum of these errors gives rise to a characteristic accent in the second language for speakers of the first language.

In our first language we come to use a familiar range of sounds, combinations of sounds, pitch, tone, rhythm, voice quality, all of which contribute to our phonological competence in the language. For the most part, we use these features unconsciously. When we encounter new sounds in a different language, we tend to approximate production of those sounds based on the sounds which we already have at our disposal. This places a far lighter cognitive load on the speaker than the alternative of consciously generating a range of new sounds. Gradually we may come to refine our production of these sounds until they approach native sounds in the target language, but the extent to which we do this will depend on a number of factors.

Feedback will play an important role. Without the right kind of feedback, we may not even be aware that our pronunciation differs from native pronunciation. Functional adequacy will be another deciding factor. If we can achieve whatever we want or need to achieve using approximate sounds, there may be little or no motivation to refine them. Functional adequacy will be related to the demands which our environment puts upon us. Prolonged contact with native speakers for example will demand a far higher level of functional adequacy than a classroom environment, particularly if that environ-

ment is tolerant of typical pronunciation errors.

Most language learners will continue to refine all aspects of their language competence until they reach a level of functional adequacy with which they are comfortable. Beyond this point, ‘fossilization’ may take place (Selinker 1972). The learner reaches a point at which development slows down, and any further progress comes very slowly. New feedback, new motivation and more demanding environments are likely to be needed to re-start the processes of refinement.

### The Phonetic Inventories of Japanese and English

Since our students almost all speak Japanese as a first language, we may expect them to be prone to similar problems of negative transfer, and observation does seem to suggest that this is the case. A useful way to begin might be to compare Japanese and English phonology. A detailed description of the phonology of each language can be found in Tsujimura (1996).

Japanese and English have a similar number of consonants, but there are many which occur in one language and not the other. Typically, a speaker of English displays more jaw and lip movement than a speaker of Japanese. The consonant sounds represented by the highlighted letters in the examples below are present in spoken English but missing from spoken Japanese.

**v**ase

**f**ine

**t**hen

**t**hink

**w**ish

**l**ight

**r**ight

**v**ision (present in some dialects of Japanese)

The first five require the use of lips and/or teeth, hardly used in the articulation of Japanese consonants. Japanese has something close to the **w** sound, but lip-rounding is barely detectable.

There is nothing quite like the English **l** and **r** sounds in Japa-

nese, the nearest Japanese equivalent being different from both English sounds.

Those consonants which come close in the two languages are often still distinct in ways which can hinder communication. The consonants highlighted in

**p**en  
**t**iny  
**c**at

are aspirated in English in initial position (spoken with a puff of air), but not so in Japanese. The consonants highlighted in

**ad**apt  
**t**iny

are pronounced in English with the tip of the tongue against the alveolar ridge, while in Japanese it is the front part of the blade of the tongue which makes contact. With

**sh**oe  
**j**udge  
**ch**urch

the lips are rounded in English, but much less so if at all for the Japanese equivalents. Finally the Japanese equivalent of the **h** in

**h**ear

may be spoken with some slight vibration of the vocal chords.

The articulation of the consonants is perhaps easier to describe and to understand than the articulation of the vowels. There are just five vowels in standard Japanese, and they can be characterised as

high front	i	high back	u
mid front	e	mid back	o
Low central			

All of these vowels can be short or long, and there is little evidence of lip rounding or lip spreading in most normal speech.

Comparing Japanese vowels with English vowels is not so

straightforward. As we shall see below, we must first consider which variety of English we are dealing with. The difference between varieties of English is particularly marked in the vowels, 'Indeed, vowel differences make up most of the distinctiveness which we associate with a particular accent' (Crystal, 1995 p. 237). Detailed surveys of different varieties of English will be found, for example, in Crystal (1995), in Gramley and Pätzold (1992) and in Graddol et al. (1996).

Most varieties of English use around twenty vowels, and this is clearly a problem for Japanese learners. For most Japanese speakers, the Japanese vowels are so clearly distinct, the articulatory position of these vowels so firmly fixed, that many may need some persuading that the articulatory organs are capable of producing sounds other than those which occur in Japanese.

### A Phonology Syllabus

Comparison of the phonetic inventories of Japanese and English may suggest potential problems for Japanese learners, but to what extent are these realised as difficulties for our students? In particular, what is the functional significance of these difficulties? Minor pronunciation errors which identify the speaker as Japanese rather than a native speaker of English are unfortunate, but it is those errors which impair communication which deserve the greatest attention. We must aim for a phonology syllabus which gives the greatest and most immediate attention to those areas of phonology where a real improvement in communicative competence can be achieved.

In deciding what to teach we must be reasonably sure of a successful outcome. All those involved in the teaching must feel competent to teach the chosen points, the students must be readily enabled to learn them, and once taught those points must make a significant and lasting difference to the language behaviour of the students, in relation to the goal of communicative competence.

In our first year of teaching at AUHW (1999-2000), we corrected pronunciation errors as they arose, and there was a good deal of agreement between teachers as to which were the most functionally significant errors. Accordingly, in our second year we chose to introduce systematic teaching of particular points throughout each of the four courses taught during the year. In our third year, this basic syllabus has

remained much the same, except that we have changed the order of presentation of some items, partly to allow some progression, partly to fit with other parts of the syllabus.

The basic syllabus includes all of those consonants of English which do not occur in Japanese, the initial consonant in **bet** (to contrast with **vet** and **pet**), and the vowels contrasted in the pairs live-leave, walk-work, barn-burn, hat-hut.

Here I am concerned mostly with segmental features, individual consonants and vowels which correspond very roughly to letters of the alphabet, but our syllabus also has to include features which go beyond the individual sound, such as intonation, rhythm and stress. The reduced vowel we find in unstressed contexts, such as the vowel represented by the highlighted letter in 'bigger **th**an that', is an important sound of English and we spend some time on this, but it is most successfully taught in conjunction with the notion of stress rather than as an isolated sound. Beyond the individual segment, Japanese speakers often find difficulty with combinations of sounds which are not found in Japanese, even if the individual sounds themselves are familiar. There are problems with linking phenomena

he **is**  
Go **to a** shop  
an **e**gg  
a magazine **and a** book

with consonant clusters

ne**xt**

with final consonants (often supported with a final vowel by Japanese speakers)

good**d** food

and with certain consonant-vowel combinations

**s**ister  
**se**at  
**t**ickle  
**te**am  
**to**o

I shall have nothing further to say here about such difficulties, which go beyond the single phonological segment.

## Measures of Success

Explicit phonological instruction is not universally practised in foreign language teaching. When we learn our first language it is not necessary for someone to explain how the sounds of the language should be articulated. We learn through observation and imitation, and it may be reasonable to suppose that we can do the same as we acquire a second language. However, we may not have the same exposure to a second language as we had to our first language, in terms of both quality and quantity, particularly if we learn in a classroom. There may be fewer opportunities for observation, and imitation may be flawed if feedback is insufficient. Furthermore, as we approach a second language we face the extra complication of negative transfer from our first language.

One argument for explicit phonological instruction is that it appears to offer a shortcut to phonological acquisition, but here we run into standard arguments about the way language is acquired and processed. Most of our language use does not require a conscious processing effort. Whatever aspect of language we teach, syntax, semantics, phonology, we cannot say that it has been learnt until the learner is able to use it automatically, unconsciously. 'Acquired' may be a more appropriate term than 'learnt'. Will this be achieved more successfully through observation and imitation, or through explicit instruction? There has been lengthy debate about this issue, but in either case a great deal of practice will be required, and the two methods are not in any case mutually exclusive.

One of the reasons I believe there is a place for explicit instruction is the phenomenon of fossilization, referred to earlier. Motivation is an important element in continuing to refine and improve competence in a language, and phonological instruction raises awareness of an important aspect of language and presents what may be new challenges. When asked on questionnaires which aspects of the English courses they have found useful, many of our students have spontaneously singled out pronunciation practice.

There are of course two sides to phonological acquisition, the ability to speak and the ability to listen. We might suppose that the two go hand in hand, and that progress in one skill will automatically bring progress in the other. However, this is not necessarily the case. Amongst other things, producing the right sounds of a language will involve motor skills (the

manipulation of the organs of articulation) and memory (remembering the distinctive features of each sound and how the organs of articulation are operated in order to produce those features). Listening is a different and very complex skill. No conscious motor skills are normally involved, and it is sounds rather than movements which need to be recalled and contrasted. There is often not time or opportunity to observe movement of the speaker's organs of articulation, and the listener faced with a steady stream of sound must use all the phonetic, phonological, syntactic, semantic and contextual clues available to decode the message. Simply put, the ability to produce a sound does not imply the ability to recognise that sound when someone else produces it, and vice versa.

How do we measure the success of teaching and learning in this area? Let me deal first of all with the production of appropriate sounds. The target sound is introduced first of all by the teacher, with plenty of opportunity for observation, which includes listening and also watching. Silent mouthing of the sound is a useful technique at this stage, and exercises contrasting similar sounds will be useful to verify that the students do indeed recognise the distinctive features of the target sound. These exercises may involve a watching stage - silent mouthing of the sound, with attention focussed on the movement of the organs of articulation - and a listening stage, where the speaker's mouth is not visible. Once the students begin producing the target sound, practice, monitoring and feedback become very important. This monitoring gives the best guide to progress, but it is a long-term process. Pronunciation tends to shift gradually rather than in one great leap forward, and the practice, monitoring and feedback need to be maintained until the target sound is used unconsciously.

Formal testing takes place throughout the year. In the first stage, testing of specific sounds is done through controlled reading exercises, and the results here have been very encouraging. In the most recent test involving this kind of exercise, the students averaged 80.94% on the speaking test. Of course, this is not a natural test. In the first place it relies heavily on short-term memory, as the individual sounds have been taught within the previous six weeks, and monitored in the days before the test. Secondly, the students maintain a high level of concentration and produce better results than they would in less controlled circumstances. The second test some weeks later involves free conversation only, albeit on prepared topics, but there is still an element of assessment based

on the phonological features studied. The most recent average for this test was 70.76%. Undoubtedly the students did not perform so well on the individual sounds in the less structured test, but little of what was said by this stage would have been unintelligible to a sympathetic speaker of English.

On the listening side, progress is more difficult to quantify. In April we gave all students a short test in which they were asked to identify which of two words the teacher was reading. Each set of two words was a minimal pair, differing only in a single phonological segment (in my variety of English at least). The pairs were chosen based on our own expectations of sounds which may be difficult, with further examples taken from the literature on Japanese English. We carried out this test in the second week of teaching, so that students had had a little time to familiarise themselves with their teacher's voice, but before we had started teaching pronunciation in earnest. Before the test began, each pair of words was read out in the order in which they appeared on the paper, and then a single word from each pair was read twice for the students to identify. The results are shown in the table below, arranged in descending order of difficulty, with the letters A - D representing the four teachers who carried out the test.

Minimal Pairs Test Percentage Errors					
	A %	B %	C %	D %	Overall %
berry / very	57	47	34	47	46
seat / sheet	29	47	36	38	36
sink / think	37	38	42	25	36
barn / burn	16	16	32	53	28
sip / ship	29	31	20	34	28
hat / hut	16	56	12	13	22
light / right	16	16	38	6	21
thin / thing	31	25	20	0	20
sit / seat	43	19	8	3	20
walk / work	24	13	8	38	20
zen / then	14	22	16	28	19
shin / thin	6	6	14	6	9
force / horse	12	6	2	3	6
where / when	0	0	18	0	6
fall / hall	4	0	4	0	2
big / pig	0	0	8	0	2
fence / hence	6	0	0	0	2
tease / cheese	0	0	2	0	1
jeep / deep	0	0	0	0	0
look / lock	0	0	0	0	0
Overall	17	17	16	15	16

These results give us some idea of where our teaching priorities should lie, but we must take into account the functional load of each of the contrasts. The distinction zen / then for example gave rise to 19% error, but it is possible that fewer or less frequently occurring words in English are distinguished by this contrast than by some of the contrasts lower down the list.

If we assume that students who did not know the answer took a guess (very few items were not attempted) and that 50% of these guesses would be correct, then the figures in this table are more alarming than they appear at first sight. If nobody recognised a particular distinction and everybody guessed, we might expect a failure rate of just 50%, very close to the figure recorded for berry / very. If only half of the students

knew a particular distinction and the rest guessed, we might expect the failure rate to be just 25% (50% knew the answer, and a further 25% guessed correctly).

It is interesting to note that the overall level of difficulty was about the same for each of the four teachers involved. Different rates of error for some of the sounds are accounted for by differences of accent between the four teachers, speaking four slightly different varieties of English. As we might expect, the most striking differences are for those pairs which are distinguished by vowel sounds.

This form of testing has so far not formed a part of our course tests and it is unlikely to do so in the future, but it is a useful diagnostic tool. It tests only a very small but essential part of the apparatus needed for successful listening. Phoneme recognition, recognising the sounds of a language as distinct from one another, is a primary process in listening comprehension, the first hurdle, and without a certain degree of success in phoneme recognition other comprehension processes are disabled.

As a form of feedback for students and diagnostic monitoring for course planning, three classes (50 students in all) received the same minimal pairs test in July, a week before the end of the semester. The results of the first and second tests for these students are compared below.

Minimal Pairs Test Percentage Errors		
Date of Test	April %	July %
berry / very	34	9
seat / sheet	36	4
sink / think	42	2
barn / burn	32	30
sip / ship	20	9
hat / hut	12	13
light / right	38	2
thin / thing	20	4
sit / seat	8	0
walk / work	8	4
zen / then	16	7
shin / thin	14	2
force / horse	2	0
where / when	18	7
fall / hall	4	2
big / pig	8	0
fence / hence	0	4
tease / cheese	2	4
jeep / deep	0	0
look / lock	0	0
Overall	16	5

The pairs barn / burn, hat / hut, and walk / work had not been specifically targeted for practice up to the time of the July test, which may explain the lack of improvement for the first two pairs, but there appears to have been significant improvement in most areas. However, some words of caution are in order. Firstly, at least some of the improvement may be sim-

ply due to the fact that the students had become accustomed to the teacher's voice. Secondly, only short-term effects on performance were tested, but the observed changes may not be maintained in the longer term. Thirdly, since minimal pair practice was a fairly regular part of the teaching and learning process, we have to wonder to what extent students have been trained to deal with a particular format of exercise rather than acquiring useful comprehension skills. Nevertheless the results of these tests do appear to be encouraging.

Of course the real test of whether anything useful has been learnt would be to look for evidence of overall improvement in listening comprehension skills, but this kind of evidence is hard to come by. Preliminary investigation suggests that with similar exposure to English, students who have not been used to specific listening training do not make the same progress with a minimal pair test, but it is difficult to measure the impact on overall competence. As all of our students are exposed to training with the same sounds, we have no control group for comparison. Furthermore, although recognition of individual phonological segments is a primary skill, it is such a small part of the processes involved in listening comprehension that even if a control group were available it would be difficult to screen for all of the other factors.

### Conclusion

The recognition and production of specific phonological segments are small but important parts of what our English courses aim to achieve. The results of monitoring and testing during the last year suggest that good progress is being made with these skills, but further study will be required to identify lasting benefits and assess the contribution which such changes make to overall communicative competence.

(accepted: November 1, 2001)

### References

- Celce-Murcia, M., Brinton, D.M. and Goodwin, J.M. (1996)  
Teaching Pronunciation Cambridge: Cambridge University Press
- Crystal, D. (1995)  
The Cambridge Encyclopedia of the English Language  
Cambridge: Cambridge University Press

- Graddol, D, Leith, D. and Swann, J. (1996)  
English: History, Diversity and Change London: Routledge
- Gramley, S.E. and Pätzold, K-M. (1992)  
A Survey of Modern English London: Routledge
- Pennington, M.C. (1996)  
Phonology in English Language Teaching  
New York: Addison Wesley Longman
- Scovel, T. (1969)  
'Foreign Accent: Language Acquisition and Cerebral Dominance'  
Language Learning 19, 245-254
- Scovel, T (1988)  
A Time to Speak: A Psycholinguistic Inquiry into the Critical Period for Human Speech New York: Newbury House
- Selinker, L. (1972)  
'Interlanguage' International Review of Applied Linguistics 10, 209-231
- Singleton, D. (1989)  
Language Acquisition: The Age Factor Clevedon: Multilingual Matters
- Tsujimura, N. (1996)  
An Introduction to Japanese Linguistics Oxford: Blackwell