TEACHING ENGLISH PHONOLOGY TO SPEAKERS OF
THE FORMOSAN DIALECT OF CHINESE

by

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CHAPTER I

INTRODUCTION

1.1 "The linguist's first statement about language is that it
is made up of sounds. Other symbolic systems--writing, Morse
Code, even hieroglyphics--are secondary representations".[1]
In our own daily life, "we learned to speak before we learned
to write, and we carry our daily affairs far more by means of
speech than by writing."[2]

1.2 Thus, "In learning a new language the chief problem is the
mastering of the sound system--to understand the stream of
speech, to hear the distinctive sound features and to approxi-
mate their production."[3] It is an obvious fact that when learn-
ing a foreign language students tend to transfer their entire
native language system in the process, including its phonemes
and their variants, its stress and rhythm patterns, and its
intonation patterns."[4] When a Formosan speaker learns to speak
English, he tends to transfer his Formosan habits which have
been practiced since childhood, "---to transfer known elements
of language from familiar situations to new situations or to
create new utterances from familiar ones in a new situation."[5]

1.3 The most basic elements in the expression system are the
phonemes.[6] No two languages have the same set of phonemes.
Thus, the first thing in second language learning is to practice
the "peculiar" sounds through the series of steps--recognition,
imitation, repetition, variation and selection.[7]

THE FORMOSAN DIALECT

1.4   The Formosan dialect is defined as the spoken language
which is now used by the Formosan people who immigrated from the
Hokkien Province of the China mainland to the Island of Formosa
and the Pescadores about three centuries ago. From the tradi-
tional viewpoint, such a "Formosan dialect" may not exist because
it might be regarded as the Hokkien dialect (or Amoy dialect)
which spread through Formosa.

1.5   The Chinese language can roughly be classified into Mandarin,
Soochow, Cantonese, Hakka and Hokkien dialects.[8]

1.6   In this case, Hokkien dialect is often referred to as the
Amoy dialect, which is used in the southern Hokkien Province.
As far as the total population using the dialect is concerned[9],
there are about 5 million people in the southeast of Hokkien,
northeast of Canton, about 7 million in Formosa and about 3
million overseas speakers of Hokkien in South Pacific areas,
i.e., the Philippines, Viet Nam, Thailand, etc. These groups
total 15 million prople who are using the Amoy dialect.

1.7   Yu-te Wang points out that the Formosan dialect should be
distinguished from the Amoy dialect for a number of reasons.[10]
Languages constantly change. About a century before the American
people won their independence from the British Empire, the Formosan
people had already established their own area. For the most part,
these Pilgrim Fathers crossed over from the southeastern part
of Hokkien Province three centuries ago. Since then, the manners,
customs, and the language have been forming their own pecularities.

Of course, they constitute only a small part in the history of
the Chinese race which has continued uninterrupted for four
thousand years. This is one reason that research on the Formosan
dialect was considered of no importance.[11] However, it is true
that the Formosan dialect is not pure Amoy dialect just as
American English is not exactly the same as the English spoken
in England. A view of the internal structures of these two
dialects shows they are different in: (1) phonemic differentiation;
(2) the scope of vocabulary; due to the Japanese domination for
50 years (1895-1945) loanwards have been adopted, and under the
effect of modern living, new vocabulary has been formed; (3) the
differentiation of tones (pitches) and intonation.

PURPOSE AND PROCEDURES

1.8 This study is intended to help the Formosan speaker to
learn English phonology, by demonstrating the methods advocated
by linguists in approaching the problems of teaching English
pronunciation to Formosan speakers.

1.9 Many western people consider that all of the oriental peo-
ple, including Korean, Japanese, Thai and Mandarin, have general
difficulty in producing and distinguishing English /l/ and /r/.
If we make a closer observation, we find the difficulty is differ-
ent from language to language. Taking Mandarin as an example:
Mandarin has initial / l / and / r /, but no initial / r / or
final / l /. Thus Mandarin speakers will have difficulty in
producing /r/ in initial and /l/ in any other than initial position.

Formosan, on the other hand, does not have a phoneme /r/. Formosan speakers will have trouble in producing English /r/ in any position. Further, Formosans find difficulty in distinguishing English phonemes /l/ and /d/, since Formosan has no alveolar, voiced stop /d/, but has the liquid, alveolar, voiced /l/. This paper will explore these contrasts in detail.

1.10 The first step in the procedure is to contrast the phonemic inventories of the two languages. Second, the contrasts are explored in terms of phonetics and allophonics. Finally, on the basis of contrasts noted and interferences predicted, drills are suggested for meeting the problems that Formosan speakers may be expected to encounter in learning the pronunciation of English.

REVIEW OF LITERATURE

1.11 "The twenty years since the beginning of World War II have witnessed what amounts to a revolution in the teaching of language. The change consists largely of a growing recognition of the relevance of linguistics to language teaching, and the development of a methodology for the application of the findings of linguistic investigation to the teaching of language."[12] There are a number of books concerned with the contrastive analysis approach to language teaching.

1.12 Among the most significant contributions of the linguists are the presentations of linguistic analysis and how it relates to the problems of second language teaching. Jones[13] presents the idea of phonemes as implicit in the work of all phoneticians

and orthographists who have employed broad transcriptions.
Bloomfield[14] presents the fullest introduction to linguistics
and is regarded from a behaviorist viewpoint as an indispensable
summary and guide. Prator[15] provides a check list of categories
in accordance with the international phonetic alphabetic systems
of several languages. Gleason[16] gives a clear description of
present techniques of analysis. Francis[17] discusses carefully
the allophonics of English. Smith and Trager[18] present the
system of English phonemics used by linguists in the past few
years. Thomas[19] makes a more accurate analysis of consonants
and vowels of American English. Wise[20] uses diagrams in obser-
ving consonant and vowel systems for articulation training of
students in English as a foreign language. Fries'[21] study is
concerned with teaching English in the most effective way--the
teacher should know its sound system, its structural system and
its vocabulary--from the point of view of a descriptive analysis
in accord with modern linguistic science. Lado[22] tries to relate
the theory of descriptive linguistics to the problems of second-
language teaching. He deals with the comparison of sound systems
and points out the value of contrastive studies. Hill[23] notes
that, if scientific analysis of language produces results which
are of use to the language teacher, and if linguistic scientists
can state them in a usable form, these results should sooner or
later reach the classroom. He strongly recommends that language
teachers have as important a job as linguistic scientists in im-
proving language teaching.

1.13 A review of the literature on Formosan dialect reveals only a few works in this field. Saunders[24] outlines the phonological problems of the Hokkien speaker in learning English. Although the scope of his work is more limited than "Chinese language", yet from the discussion in 1.7 we know that it is still broader than the "Formosan dialect". Wang[25] presents the system of Formosan phonemics most generally used by previous researchers. His work is considered the first book on the Formosan dialect written from a scientific rather than humanistic viewpoint. Ko and Tan's book[26] is composed for American Catholic priests wishing to master spoken Formosan. Chen's study[27] is based on the contrastive analysis of the allophonics of Formosan and English. From this she divides the English phoneme inventories in the following steps: (1) sounds which do not exist in Formosan; (2) sounds which are very similar, but slightly different. She also discusses in detail English consonant clusters which will trouble the Formosan speaker.

1.14 Besides the materials mentioned above, there are a number of contrastive studies done which have helped me in analysing and contrasting English and Formosan[28]. The above studies are reliable sources and a great help to me in my study, but there is no doubt that further study on the Formosan dialect is needed.

CHAPTER 2

CONTRASTIVE ANALYSIS OF CONSONANTS

OF ENGLISH AND FORMOSAN

2.1 Contrastive Consonant Phoneme Inventory

As indicated by reference to the phoneme inventory for
English presented by Trager and Smith[29] and the inventory for
Formosan presented by Yu-te Wang[30], the consonant systems of
English and Formosan are somewhat different. English has a sys-
tematic arrangement of voiced and voiceless fricatives from dental
to palatal, while in Formosan, the fricative series has only two
phonemes /s h/. There are three phonemes /c' c j/ classified
as sibilants. Third, in English, stops and fricatives are voiced
and voiceless while in Formosan, voiceless stops and sibilants
may be further classified as aspirate and non-aspirate. A fur-
ther difference is that Formosan lacks the alveolar voiced stop
/d/, the labio-dental fricatives /f v/, alveolar /z/, alveo-
palatal /š ž/, interdental fricatives /θ ð/ and retroflex /r/,
but does have /p' t' k' c' c j/ lacking in English.

2.2 Articulation of English Consonants

The consonant phonemes in English which have counterparts
in Formosan should not be difficult for the Formosan to produce
in isolation. There are, of course, phonetic details which must
be taken into account if the student is to achieve a mastery of
the English sound system. Further, the Formosan speaker will
have difficulty in producing English / d f v θ ð š ž z /, which

have no counterparts in Formosan. The Formosan consonants
lacking counterparts in English are relatively unimportant to
the Formosan speaker who is learning English since he will not
need them.

2.21 Stops

The Formosan learner can usually employ his Formosan arti-
culation for the English stops / p b t k g / with satisfactory
results. The predictable problems of articulation and discrimi-
nation in the stop series are associated with /d/, for which the
Formosan speaker will tend to substitute /l/. It is necessary
for the Formosan speaker to distinguish consistently and accurate-
ly between English /d/ and /l/. Both /d/ and /l/ are made in the
same place by putting the tip of the tongue on the alveolarridge.
However, the sound /d/ is a voiced stop, while in the case of /l/,
air is permitted to escape around the sides of the tongue.

2.211 The /d/ phoneme in English contains several allophones.[31]
Wise describes its distribution as follows:

    a. Dental $\underline{/}$ d $\underline{/}$, that is $\underline{/}$ d $\underline{/}$ as in <u>width</u> $\underline{/}$ wIdθ $\underline{/}$.
        (Since <u>d</u> is never pronounced with the tongue in the
        dental position except before th.)
    b. Unreleased $\underline{/}$ d $\underline{/}$, as when <u>mad</u> $\underline{/}$ mæd $\underline{/}$ is spoken
        without immediately moving the tongue from contact
        with the alveolar ridge.
    c. Alveolar $\underline{/}$ d $\underline{/}$, which is regarded as the normal
        English pattern. It is made with the tongue in contact
        with the alveolar ridge.
    d. $\underline{/}$ d $\underline{/}$ with bilateral plosion, when followed by syllabic
        $\underline{/}$ l $\underline{/}$, as in <u>riddle</u> $\underline{/}$ ridl̩ $\underline{/}$.
    e. $\underline{/}$ d $\underline{/}$ with nasal plosion when followed by syllabic $\underline{/}$ ŋ $\underline{/}$,
        as in <u>ridden</u> $\underline{/}$ rIdn̩ $\underline{/}$.
    f. Medial $\underline{/}$ d $\underline{/}$ between pronounced vowels is often heard
        in standard American English as /ɾ/, as in <u>ladder</u>
        /læɾɚ , læɾə /.

2.212 The student may be given drills with /d/ in various positions.

made	do	riddle	ridden	ladder
had	dime	bottle	sudden	leader
paid	dear	noodle	garden	redder
head	down	candle	harden	better

2.22 Lateral

The English /l/ is typically produced with the tip of the tongue touching the alveolar ridge, the mid part curving downward and the back raised. The resulting schwa-colored /l/ causes any English vowel before /l/ to have an off-glide in the direction of mid-central.[32]

2.221 There are four recognizable /l/ allophones in most dialects of American English. According to Francis these are the voiced and voiceless apico-alveolar laterals, the voiced apico-alveolar lateral with dorso-velar coarticulation, and the voiced dorso-velar lateral. Francis describes the distribution of /l/ allophones in English as follows:[33]

    a. The voiced apico-alveolar lateral, $\underline{/l/}$ the so-called "clear l". It occurs in initial position and between a voiced consonant and following vowel as in link $\underline{link}$ /lɪŋk/, and glance /glæns/.

    b. The voiceless apico-alveolar lateral, /l̥/ occurs often with voiceless consonants, as in flip /flɪp/. The sound is never heard initially.

    c. The voiced apico-alveolar with dorso-velar coarticulation, /ɫ/, is the usual variety of so-called "dark l" found after vowels and as a syllabic nucleus in English. Examples of the usual position of this sound are gulf /gʌɫf/ and bottle /batɫ/.

    d. The voiced dorso-velar, /ʟ/ is an occasional dialectal or individual variant of /ɫ/, replacing it in some or all positions as in /mɪɫk/, /mɪʟk/ and /mɪʟ̩k/.

2.222 The Formosan /l/ is somewhat more sonant and is frequently pronounced much more rapidly than in English. Sometimes it sounds like /d/ to an English speaker. This is because the Formosan /l/ is a voiced alveolar stop. It is what is known technically as "flapped d".

2.223 Formosan /l/ occurs only in the initial pre-vocalic position. Thus, the predictable problems for Formosans in producing English /l/ come in post-vocalic position and after a voiceless consonant.

2.224 When Formosan speakers pronounce an /l/ in the preconsonantal position, they tend to pronounce it as an /o/. When /l/ comes after a back vowel and is followed by consonant, /l/ is omitted by the Formosan speaker. Thus, a drill of /-VlC/ is needed.

2.225 A drill like the following will be helpful in establishing the new habit.

/lVl-/	/Cl-/	/ClV-/	/CVlC-/
lily	play	dale	wolf
Leland	blow	fall	help
lowly	clay	real	false

2.226 The following phonology drills are designed to present systematically the pronunciation of English /d/ in contrasting with English /l/. These drills are limited to the alveolar /d/ in the initial position. Their trouble with /d/ in the medial and final positions will not be mentioned here, because in these cases, /d/ is replaced by /t/.

/d/

English /l/ is an alveolar lateral, with a relatively front
vowel resonance, before vowel and /j/.

English /d/ is a voiced alveolar stop, produced in a manner
paralleling that of /t/, with two exceptions: (1) the vocal
bands are in vibration (2) there is no strong aspiration.

Drill 1. Imitation drill.

    a. Put the tip of your tongue on the alveolar ridge, close
       velum, and let the vocalized breath stream come out over
       both sides of the tongue, say /l/.

       Listen: /l/ /l,l/ /l,l,l/ /l,l,l,l/
       Imitate: /l/ /l,l/ /l,l,l/ /l,l,l,l/

    b. Now put the tip of your tongue at the same place as
       /l/, close velum and let the vocalized breath stream
       come out suddenly with a stopping sound, say /d/.

       Listen: /d/ /d,d/ /d,d,d/ /d,d,d,d/
       Imitate: /d/ /d,d/ /d,d,d/ /d,d,d,d/

Drill 2. Repetition drill. Contrasting /l/ and /d/ in isolation.

Listen:	late	date
	lot	dot
	lime	dime
	line	dine
Repeat:	late	date
	lot	dot
	lime	dime
	line	dine

lamp	damp
like	dike
love	dove
low	doe

Drill 3. Repetition drill. Contrasting /l/ and /d/ in different

utterances.

Listen: It's <u>late</u>.
It's a <u>date</u>.

There's quite a <u>lot</u>.
There's a <u>dot</u>.

It's a <u>lime</u> tree.
It's a <u>dime</u>.

Repeat: It's <u>late</u>.
It's a <u>date</u>.

There's quite a <u>lot</u>.
There's a <u>dot</u>.

It's a <u>lime</u> tree.
It's a <u>dime</u>.

Let's <u>line</u> up.
Let's <u>dine</u> out.

It's a <u>lamp</u>.
It's <u>damp</u>.

I think I <u>like</u> it.
I see the <u>dike</u>.

Drill 4. Repetition drill. English /d/ is an alveolar voiced

stop.

Listen: Dora has a date.

Dora has a dime.

Dora has a dove.

Dora has a difficulty.

Dora has a dimple.

Repeat: Dora has a date.

           Dora has a dime.

           Dora has a dove.

           Dora has a dimple.

           Dora has a difficulty.

           Dora has a degree.

           Dora has a dish.

           Dora has a dream.

           Dora has a drink.

           Dora has a date.

           Dora has a dime.

2.23 Fricatives

The predictable problems of discrimination and articulation in the fricative series are associated with / f v θ ð s z š ž /.

2.231 English /f/ is a voiceless labiodental fricative, /f/ occurs initially, medially and finally as in <u>feed</u>, <u>coffee</u> and <u>half</u>.

2.2311 The Formosan speaker uses a voiceless bilabial fricative ⎡ɸ ⎤ for the English /f/ in the initial, medial and final position.

          Such as ⎡ɸud ⎤ for <u>food</u>,

                    ⎡koɸiy ⎤ for <u>coffee</u>,

                    ⎡taɸu ⎤ for <u>tough</u>.

Formosan students must, therefore, practice these sounds separately in the initial position, the medial position, and the final positions.

2.2312 A drill contrasting $\int_{\underset{w}{h}} \overline{\int}$ with $\int f \overline{\int}$ in the initial
position will help to establish $\int f \overline{\int}$ articulation.

$\int h \overline{\int}$	$\int f \overline{\int}$
wheel	feel
while	file
white	fight
whole	foal
why	fie

2.2313 The student may be given drills beginning with items
with /f/ in initial position, thence to medial position and
final position.

feel	coffee	tough
file	dolphin	photograph
fight	muffin	half

2.232 English /v/ is the voiced counterpart of /f/. It is a
voiced, fricative, labiodental continuant. It is made by rest-
ing the upper teeth lightly on the lower lip, closing the velum,
and passing the voiced air stream through the constricted spaces
between the lips and teeth.

2.2321 Since there is no counterpart to English /v/ in Formosan,
the Formosan speaker tends to substitute his bilabial voiced stop
/b/ for English /v/ in the initial, medial and the final positions.
He tends to say /beli/ for <u>very</u>, /sabiys/ for <u>service</u>, /hæb/ for
<u>have</u>.

2.2322 In order for the Formosan to avoid the substitution of
/b/ for /v/, a drill contrasting English /b/ with /v/ will help

to establish the /v/ articulation.

berry	– very	harbored	– Harvard	dub	– dove
bigger	– vigour	cupboard	– covered	robe	– rove
bolt	– volt	ribbon	– riven	Serb	– serve

2.233 English /θ/ is a voiceless, interdental, fricative, made by putting the tongue between the teeth and allowing the breath to escape with a hissing sound.

2.2331 The Formosan speaker substitutes the fricative /s/ for English /θ/ in the initial, medial and final position, such as

/sink/ for think

/tuwseik/ for toothache

/tiys/ for teeth

Formosan students must, therefore, practice /θ/ separately in the initial position, the medial position and the final positions.

2.2332 A drill contrasting /s/ with /θ/ in the initial, and final position will help to establish /θ/ articulation. Since the /-s-, -θ-/ contrast carries such low functional load in medial position, the phonetic statement by the teacher should suffice when the discrimination problem is encountered in medial position.

/s-/	/θ-/	/-s/	/-θ/
sink	think	tease	teeth
sought	thought	face	faith
sing	thing	mouse	mouth
some	thumb	kiss	kith

2.234 English /ð/ is the voiced counterpart of /θ/. It is an interdental fricative, made by placing the tip of the tongue in

light contact with the back surfaces of the front teeth and
passing a stream of vocalized air through the constricted spaces
between the tongue and teeth. The velum is closed and the sides
of the tongue are in contact with the upper molars. [34] /ð/ may
occur initially, medially and finally, as in

there	/ ðehr /
gather	/ gǽðər /
bathe	/ béyð /

2.341 Formosan students tend to substitute /z/ for /ð/ in all
positions, but often substitute /l/ in initial and medial positions.
In other words, we can predict that they will substitute /z/ for
/ð/ in final position, but that either /z/ or /l/ might be subs-
tituted for /ð/ in initial and medial positions. Since these
contrasts carry low functional load in initial and medial posi-
tions but relatively high functional load in final position,
drill contrasting /z/ and /ð/ in final position can be used to
establish the discrimination. Thereafter, the phonetic statement
by the teacher, with perhaps a brief drill using nonsense syllables
to supplement the few available minimal pairs, should suffice
if the student should say, for example, "uzzer" for "other".
If the student should turn from /z/ to /l/ in the attempt at /ð/
drill contrasting /z l ð/ should be employed.

Sue's	– soothe	razzer – rather	Zen	– then
rise	– writhe		Z	– thee
sees	– seethe			
close	– clothe			
breeze	– breathe			

$$/z\text{-} \quad l\text{-} \quad \check{\delta}\text{-}/$$

Zen	Len	then
Z	Lee	thee

2.235 English /s/ is an alveolar fricative, made by putting the tip of the tongue at or near the roof of the mouth behind the tooth ridge and letting the breath escape with a hissing sound. Formosan /s/ is a dental fricative. When it is followed by /i/, the tongue moves backward making a palatalized $\int \underset{j}{\check{s}} \, \, \rfloor$, but it is not English /š/. The Formosan speaker does not have trouble with /s/ in the final position. The predictable difficulty with /s/ is in the initial and medial positions before /-i/

2.2351 A drill contrasting /sV-/ with /si-/ in the initial position and /-sV/ with /-si-/ in the medial position will help establish /si-/ and /-si-/ artuculations.

/sV-/	/si-/	/-sV-/	/-si-/
saw	see	sensitive	sincere
sang	sing	answer	missing
sole	seal	exercise	voicing

2.236 English /š/ is a voiceless palato-alveolar fricative continuant. It is made by simultaneously blocking the nasal passages with the velum and raising the tongue against the lateral inner surfaces of the upper teeth with the tongue directed toward a point just back of the alveolar ridge. The vocalized breath stream is forced through the close stricture between the blade of the tongue and the roof of the mouth. [35]

2.2361 Since /š/ does not occur in Formosan, students will need to take particular care in pronouncing /š/ as described above.

Particularly, Formosans will need to avoid substituting pala-
talized $[š]$ for $[š]$.

2.2362 Drills contrasting /s/ and /š/ in the initial, medial
and final positions will help establish articulation of /š/.

seat – sheet	missing – mission	boss – bosh
seep – sheep		was – wash
seen – sheen		case – cash

2.237 English /z/ is the voiced counterpart of /s/. It is a
voiced, fricative alveolar continuant. It is made by placing
the tongue into occlusion with the inner surfaces of the upper
teeth, except for a narrow passage over the tip of the tongue
in front. The vocalized breath stream is passed through this
constricted passage. [36] English /z/ occurs initially, medially
and finally.

2.2371 Chen says that there is no phoneme /z/ in the Formosan
counterpart; it is simply an off-glide for /ʤ/. [37] The Formosan
speaker does not have difficulty with /z/ in the initial position
before any vowels other than /i/. The trouble lies in the ini-
tial, medial position before vowel /i/ and final position. This
is because Formosans pronounce English /z/ as a voiced Formosan
/s/; therefore, their trouble with /z/ parallels the trouble
with /s/.

2.2372 Drills like the following are usually helpful in esta-
blishing the articulation of /z/.

/zV-/	/zi-/	/-zV-/	/-zi/	/-z/
zero	zip	present	position	buzz
zoo	zinc	desert	visit	phase
zone	zeal	reason	magazine	noise

2.238 English /ž/ is the voiced counterpart of /š/. /ž/ is
produced by raising the tongue against the lateral inner sur-
faces of the upper molars with the tip directed toward a point
just back of the alveolar ridge and passing the vocalized breath
stream through the close stricture between the blade of the
tongue and the palate.[38] English /ž/ occurs medially and finally.
2.2381 The sound /ž/ is the least frequently used of all the
sounds of English.[39] but Formosan does not have it at all.
Thus, Formosan students will need to take particular care in
pronouncing /ž/ as described above.
2.2382 Drill like the following is suggested to help establish
the new articulation.

measure	garage
pleasure	rouge
vision	beige
confusion	liege

2.24 Retroflex

2.241 The consonant /r/ is a voiced retroflex alveolar contin-
uant. /r/ is made by pointing the tongue toward the roof of the
mouth at about the point where the palatal arch joins the gum
ridge, and passing the vocalized breath through the aperture
between the tongue and the hard palate. The velum is closed.[40]

2.242 English /r/ is formed in various ways in different dialects and idiolects. It is usually accompanied by some slight "protrusion" of the lips, and it is generally frictionless. "Before vowels /r/ is a vowel-like glide. In postvocalic position we substitute either a vowel for the r, or delete it entirely."[41]

2.243 As indicated in 2.1, Formosan has no such consonant as /r/ in English. Students tend to substitute /l/ for /r/ in the initial and post-consonantal positions. Hence, a drill contrasting /l/ with /r/ in initial and post-consonantal positions will help establish articulation of /r/.

/l-/	/r-/	/Cl-/	/Cr-/
light	right	play	pray
lane	rain	glad	grade
low	row	flight	fright
leap	reap	flame	frame

2.244 Further, a predictable problem for Formosan students is to distinguish among three allophones of the English /r/. Wise describes the distribution of the three /r/ allophones as follows:[42]

> These three sounds are $\lfloor \lambda \rfloor$, $\lfloor \v{r} \rfloor$ and $\lfloor c \rfloor$. Fricative r tends to occur automatically after $\lfloor t \rfloor$ or $\lfloor d \rfloor$, as in <u>try</u> $\lfloor t\lambda ai \rfloor$ and <u>dry</u> $\lfloor d\lambda ai \rfloor$. Thrilled r occurs in standard English after $\lfloor \theta \rfloor$, as in <u>three</u> $\lfloor \theta ri \rfloor$. One tap trill r is regularly used intervocalically in British English as in <u>very</u> $\lfloor v\epsilon ci \rfloor$, or at the end of a word as in "far away" $\lfloor farfwei \rfloor$.

2.245 The Formosan student must, therefore, practice /r/ in the initial, post-consonant, intervocalic, and post-vocalic positions

/rVC-/	/CrV-/	/VrV-/	/-r/	/-rC/
rear	pray	very	color	turn
rank	drive	arrow	car	Mary
reap	grade	Paris	pair	curve
road	free	arrive	four	nerve

2.25 The Formosan student should have no difficulty in the
articulation of English nasals / m n ŋ / since they are essen-
tially the same as their Formosan counterparts.

2.251 The Formosan's trouble with English nasals involves their
distributions. English / m n / may occur in the initial, medial
and final positions. /ŋ/ occurs only in the medial and final
positions. The Formosan / m n / occur only in the initial and
post-vocalic final positions and /ŋ/ may occur in the initial
and final positions.

2.252 The Formosan's predictable problem with nasals, then, is
with the use of post-vocalic / m n ŋ /. This is because the
Formosan nasals are distributed only after certain vowels:

in (stamp)		un (stable)
im (cloudy)		
iŋ (should)		
en (smoke)		om (numerous)
		oŋ (prosperous)
	am (night)	
	an (safe)	
	aŋ (husband)	

2.253 The above chart indicates that Formosan has difficulty in pronouncing / em eŋ ən əm əŋ um uŋ on/ and / ɨm ɨn ɨŋ /, /æm æn æŋ /, / ɔm ɔn ɔŋ /. Since these carry low functional load, the phonetic statement by the teacher should suffice when such problem is encountered.

2.26 Consonant Clusters

English utterances often have a group of certain consonants clustered together without any vowels in between, i.e., "A se-quence of two or more phonemes of the same class without the intervention of a phoneme of another class". [43] On the other hand, there are no true consonant clusters in Formosan. After students have learned to differentiate English consonants individ-ually, they still may not be able perceive or produce clusters precisely. Therefore, consonant clusters often cause serious trouble to native speakers of Formosan.

2.261 Each language has its own characteristic consonant and vowel arrangements; CV, VC, CVC, CCV[44], etc. In English, the following arrangements are possible:[45]

V	/o/	oh
CV	/pai/	pie
CVC	/hæt/	hat
VC	/it/	eat
VCC	/ɛlk/	elk
VCCC	/imps/	imps
CCV	/drai/	dry
CCVC	/brik/	brick

CCVCC	/bledz/	blades
CCVCCC	/sk rts/	skirts
CCVCCCC	/glimpst/	glimpsed
CCCVC	/stret/	straight
CCCVCC	/skwizd/	squeezed
CCCVCCC	/skw rmd/	squirmed

In Formosan, only the following arrangements may occur:

CVC	/kut/	(dip) (/t/ is unrele-
*CC	/mn/	(door) ased in final position)
V	/i/	(he)
VC	/it/	(one)
CV	/si/	(yes)

*For this combination in Formosan, the second consonant must always be a nasal.

2.262 When the structures of syllables in English and Formosan are compared, the difficulties of Formosan with consonant clusters become clear. In most cases Formosan does not allow many consonants to cluster together as English does. Formosan allows for no consonant clustering within the structure of its consonant-vowel arrangement.

2.263 In English, syllable division is not highly predictable, while in Formosan, all words are either separate syllables or made up of two or more distinct syllables. In Formosan both the number and the types of syllables are limited. Syllables like English brick, straight, squirmed are quite impossible in Formosan.

2.264   English consonant clusters which occur in the initial, medial and final position such as those in <u>train</u>, clu<u>st</u>er and mo<u>st</u>, have no counterparts in Formosan. Therefore, they may cause Formosan students a great deal of trouble. The Formosan learner is used to having a vowel after the consonant. Thus he will pronounce the above English consonant clusters as follows:

/tə rén/   for <u>train</u>,

/kulásutə /   for <u>cluster</u>,

/mósuto/   for <u>most</u>.

2.265   However, Saunders indicates that the initial cluster gives less trouble.[46]   Formosan learners tend to reduce medial clusters as /fléšn/ for <u>flexion</u>, /spowkman/ for <u>spokesman</u>. Final clusters including inflectional suffixes show the highest incidence of misproduction.   Saunders points out that an analysis of errors in consonants in written work shows a proportion of 1:5 for initial compared with final position, that is, there are five times as many errors in finals as in initials.

2.266   English employs combinations of consonants in the initial position which are called "post junctural and prevocalic clus-ters."[47]   In this position, the occurence will be as follows:[48]

/pl-/	play	/gl-/	glad	/str-/	stray
/pr-/	pray	/gr-/	grade	/sf-/	sphere
/bl-/	blue	/fl-/	flight	/sn-/	snap
/br-/	brew	/fr-/	ɛright	/sm-/	small
/tr-/	tree	/θr-/	thread	/sl-/	sleep
/dr-/	dream	/sp-/	speech	/spl-/	splash

/kl-/	clear	/st-/	state	/spr-/	spray
/kr-/	cry	/sk-/	skin	/skr-/	screw
				/šr-/	shrimp

*Since the other combinations / tw, kw, hw, sw, dw, gw/ are considered no trouble for Formosans, they will not be discussed.

2.267 The final position is known as "post-vocalic, prejunctural cluster". In this position, the occurence will be as follows: [49]

/-nd, -nt, -ns, -nts, -nj, -nc, -nθ, -ntθ, -nz, -ndz, -ndθ/.

/-st, -sk, -sp/.

/-ld, -lf, -lv, -lt, -lp, -ls, -lk, -lθ, -ltθ, -lm, -ln, -lj, -lb, -ls, -lc, -lfθ/.

/-nk, -nkθ/.

/-ŋk/.

/-mp, -mpt, -mps, -mf, -mpf/.

/-ft, -fθ/.

/-dθ, -dz/.

/-rb, -rd, -rf, -rg, -rj, -rc, -rk, -rl, -rm, -rn, -rp, -rs, -rt, -rv, -rz, -rs, -rθ, -rps, -rst, -rts, -rmpθ/.

/-kst, -ksθ/.

/-ps, -pt/.

2.268 For overcoming the difficulty arising both in the initial and final clusters, the phonetic statement with a short imitation drill like the following and an occasional reminder when incorrect pronunciation occurs, should help:

| 1. | twin | swim | brain |
| | quick | dwell | glad |

white	plan	flame
snap	pray	span
small	blame	state

2. | tent | pump | ask |
lend	lunch	corp
fence	film	box
sink	nymph	occurs
change	grasp	short

2.27 Syllabic Consonants

In words such as little, sudden and wouldn't there are
only consonant sounds in the final syllables. These are known
as syllabic consonants. They may make up a syllable without the
accompaniment of vowels.[50] They are difficult to pronounce for
Formosans. In place of /litl̩/, /wudn̩t/, they frequently pronounce
/litəl/, /wudənt/. If they are further reminded, these sounds
will become /lil/ and /wunt/.

2.271 Syllabic consonant occurs when a syllable ends in /t/,
/d/ or /n/ and the next syllable is unstressed and contains an
/l/ or /n/. This may be expressed by a formula:[51]

$$\left.\begin{matrix} t \\ d \\ n \end{matrix}\right\} + \text{ unstressed syllable containing } \left.\begin{matrix} l \\ n \end{matrix}\right\} > \text{syllabic consonant}$$

All the necessary conditions are present, for example, in <u>saddle</u>
and <u>cotton</u>, and we have the pronunciations ⎾sædl̩⏋ and ⎾katn̩⏌.
In content ⎾kɔ́ntent⏋, there is an ⎾n⏋ followed by a ⎾t⏋,
but the ⎾n⏋ is in a stressed syllable, so no syllabic consonant
results.

2.272 There are /r/, /d/, /n/ and /l/ involved in syllabic consonants which are formed with the tip of the tongue touching the tooth ridge between /r/ and /n/. If the tongue tip breaks contact and moves from its fixed position for even a fraction of a second, it will result in the insertion of an /ə/ between the two consonants.

2.273 In Formosan, there are only two syllabic consonants, /m/ and /ŋ/. These two may be called syllabic nasals for their manner of articulation. While the Formosan learns English syllabic final /n/ as in <u>sudden</u>, /ŋ/ will be used instead of /n/, thus /sudn̩/ becoming /sudŋ̩/.

2.274 It might be helpful for the Formosan student to drill as follows:

happen

cotton

ribbon

sunken

kitten

ridden

forbidden

undertaken

2.28 Semi-Vowels

"From an articulatory viewpoint, /w, y, h/ are similar to fricatives, but from a distribution viewpoint, it is more convenient to class them separately."[52] So, the term "semi-vowel" is rather a term of distribution than of articulation. "In

pre-vocalic position in the same syllable with following vowel, they function like consonants; but in post-vocalic position in the same syllable with preceding vowel, they function as vocalic off-glides. In this light, /r/ could be placed in either category or both."[53]

Chen says that the semi-vowels /y w/ in English can be said to be non-existent in Formosan. She sees that an equal syllabicity is shared by each member of the vowel cluster.[54] For example, in the word /lai/ (to come), equal prominence in pronunciation is given to both the /a/ and the /i/. But, since Formosan is a tone language, the tone phoneme may change the sound quality in some situations. There are seven tones in Formosan: tone 1--high-sustain, tone 2--rising, tone 3--falling, tone 4--neutral, tone 5--falling and rising, tone 6--mid-sustain and tone 8--snappy. Chen's statement only applies in the situation of tone 1, tone 5 and tone 6. In other situations, this may not hold true as in /duy/ (tone 8) (right) where the phoneme /y/ can not be the phoneme /i/, because /y/ does not share the same syllabicity as /u/ does.

It seems pedagogically efficient, then, to assume that Formosan has three semi-vowels /y w h/ which function as vocalic off-glides.

CONTRASTIVE ANALYSIS OF VOWELS

OF ENGLISH AND FORMOSAN

3.1 <u>Contrastive</u> <u>Vowel</u> <u>Phoneme</u> <u>Inventory</u>

There are nine vowels in English, distributed as from
front and high to back and low, according to the articulations
of the tongue and its position in mouth, these are: front
/ i e æ /, central / ɨ ə a / and back vowels / u o ɔ /.
Formosan has only six vowels. These are: front / i e /, central
/ ə a / and back vowels / u o /. This contrast indicates
that English makes three discriminations which the Formosan speaker
does not have / ɨ æ ɔ /.

3.2 <u>English</u> <u>Vowel</u> <u>Phonemes</u>

3.21 For many years authorities have differed as to how many
vowel sounds there are in English. Recently, however, linguists
have discovered that there are only a limited number of vowel
sounds which make a distinction in meaning between a pair of
words in English. (i.e. like the differences in <u>beat</u>, <u>bit</u>,
<u>bait</u>, <u>bet</u>, <u>bat</u>, <u>boat</u>, etc.)

3.22 According to the widely accepted Trager/Smith analysis,
the nine vowel phonemes of English combine with the semivowels
/ w y h / to form the gliding vowel nuclei so characteristic of
English and the traditional dipthongs / ay, oy, aw/.[55] With
reduction of stress all may undergo modification in quality in
the direction of central so that in unstressed syllables they
frequently are morphophonimically replaced by /ɨ/ or /ə/.[56]

The front vowels are made with lips spread, the back vowels with
lips rounded, and the central vowels take neutral position.
3.23 Each of these nine vowels can occur alone, with /y/, with
/w/, or with /h/. This makes a total of thirty-six possible
nuclei.· Probably no single dialect has all of them, though some
approach it closely. Every one of the thirty-six occurs, how-
ever, in some American dialect.[57]

	V	Vy	Vw	Vh
/i/	pit	bee	few	dear
/e/	pet	bay	house	dare, yeah
/æ/	pat	pass	house	baa
/ɨ/	just	bee	moon	fur
/ə/	cut	bird	go	fur
/a/	cot	buy	house	far, palm
/u/	put	buoy	do	boor
/o/	home	boy	go	pour, paw
/ɔ/	wash	wash	law	warm, paw

3.3 _Formosan_ _Vowel_ _Phonemes_

Formosan has six vowels represented by symbols / i e ə a
o u /. . / i e / are front vowels, /i/ is pronounced with the
tongue in high position and /e/ in low position. /ə a / are
central vowels, /ə/ is pronounced with the tongue in middle
position and /a/ in low position. / o u / are back vowels,
/u/ is pronounced with the tongue in high position and /o/ in
middle position.

3.31 The combination of Formosan vowels with the semivowels
/ w y / forms complex vowel nuclei and the glides are as obvious
as those in English. Formosan has ten dipthongs:

/ay/	'ı'	(cry)
/aw/	'aw'	(fold)
/ya/	'yah'	(wild)
/yo/	'yoh'	(waist)
/ie/	'yew'	(sorrow)
/iaw/	'yaw'	(hungry)
/wi/	'we'	(fray)
/we/	'hewe'	(flower)
/wa/	'gwa'	(I)
/wai/	'wai'	(crooked)

3.32 Vowels / i o u / occur with many syllables. These medials
are sometimes pronounced as true vowels, sometimes as semi-
vowels, and sometimes as true vowels followed by semi-vowels.
They are determined by whether or not they are preceded by con-
sonantal initials and whether the syllables in which they occur
are long or short as determined by their tones.[58]

3.33 Nearly all of the foregoing syllables which do not end in
/p/, /t/, /k/, /m/, /n/, or /ŋ/, occur (as separate syllables)
with nasalized vowels in Formosan. Nasalized vowels are not pho-
nemic in English. A nasalized vowel is pronounced while a nasal
consonant (like m̲, n̲, or ng̲), closes off the oral passage at
some point and relaxes the muscles of the soft palate, allowing
the sonant breath stream to pass through the nasal passage.
In pronouncing a nasalized vowel, we must allow the sound to

pass through the oral and nasal passages simultaneously.[59]

3.4 Contrasts of English and Formosan Vowel Systems

It is convenient to illustrate the contrasts between the English and Formosan vowel systems in a simplified scheme as follows:[60]

English

/iy/	'beat'	/ɨ/	'pretty'	/uw/	'boot'
/i/	'bit'			/u/	'put'
/ey/	'bait'	/ə/	'but'	/ow/	'boat'
/e/	'bet'			/ɔh/	'bought'
/æ/	'bat'	/a/	'bot'		

Formosan

/iy/	yee	'chair'				/uw/	woo	'have'
/i/	li	'you'				/ut/	wut	'crouch'
			/ə/	əh	'dip'			
/e/	be	'horse'				/o/	olang	'negro'
			/ah/	pah	'beat'			
			/a/	tza	'morning'			

3.5 The English Vowels / æ ɨ ɔ /

As this scheme indicates, English requires three discrimination which the Formosan speaker does not have, /æ ɨ ɔ /. In general, the main predictable problems of the Formosan learner in controlling the English vowel system are in producing the low front vowel /æ/ (diagraph), the high central vowel /ɨ/ (barred 'eye'), and the low back vowel /ɔ/ (open 'o').

3.51 The Vowel /æ/

Fo form /æ/ the jaw is lowered quite a bit, until the mouth is almost as wide open as it can be without making a muscular effort. [61] This is the lowest front vowel that can be made; when we move on to /a/, the sides and tip of the tongue will no longwe touch the upper or lower teeth at all. For /æ/, the lightest possible contact is made between sides of tongue and the tips and lower tooth ridge, and between sides of tongue and the tips of the upper bicuspids or even of the first molar teeth just behind the bicuspids. [62] /æ/ sound is the vowel of am /æm/, black / blæk / and cap /kæp/. It is easily confused with /a/, or /e/.

3.511 English /æ/ can be taught by having students pronounce the extreme high front vowel /i/ and, while maintaining the lips open, lower the jaw. It might be well to go over the entire series / i--e-- /.

3.512 The Formosan speaker will sometimes substitute /e/ or /a/ for /æ/, as the new phonetic habit has not been built up. It is most easily achieved by allowing the articulators to assume a position between /e/ and /a/, making sure that they result in [63] a lax vowel.

3.513 Drills contrasting /æ a/ and /æ e/ will help establish acceptable articulation for /æ/.

/æ/	/a/	/æ/	/e/
bat	bot	mass	mess
pat	pot	pan	pen

hat	hot	back	beck
sat	sot	man	men

3.52 The Vowel /ɨ/

/ɨ/ is a high-central vowel, "made with the middle of the
tongue high and the lips in neutral position."[64]   It may be
absent in some idiolects, and in certain regional dialects of
American English. We can avoid using it, usually substituting
/i/ or /ə/, without changing the meaning of the word spoken.

3.521 The 'barred i' may be heard in the word pretty as in
pretty good, but not in pretty as in pretty girl. In southern
dialects, sister is commonly pronounced as /sɨster/. Some dialects
make a distinction between just as in a just judge (used as an
adjective), and just as in He just came (used as an adverb),
in the latter, "The barred i" is considered as the vowel phoneme.

3.522 /ɨ/ is also heard as the vowel phoneme of can, when it
appears in sentences such as "I can do it" (when can is under
weak stress).

3.523 Since "the barred i" carries a low functional load, and
appears only in idiolects and some dialects, it will not be con-
sidered as a great problem which a Formosan encounters in learn-
ing English.

3.53 The Vowel /ɔ/

English /ɔ/ can be taught by moving from the position of
/a/. The lips, in the size and shape of the opening between them,
have most influence in forming this back vowel. For /a/ this

opening is about an inch and a half across, one inch from top
to bottom. The lips are somewhat protruded (pushed forward).
In order for the lips to assume this position for /ɔ/, the jaw
is raised a little. The tongue remains in approximately the same
position for /a/, but is 'bunched' a little more toward the
back of the mouth.[65]

3.531 The sound /ɔ/ is low-back, lax and round but the rounding
is still weaker. It appears initially as in 'all', medially as
in 'taught' or finally as in 'law'.

3.532 The Formosan speaker will tend to substitute the mid
back vowel /ow/ in the place of low back vowel /ɔ/ in English.
This predictable problem may be avoided if he is given drill
contrasting /ow/ and /ɔ/.

/ow/	/ɔ/
bowl	ball
boat	bought
low	law
so	saw
close	claws

CHAPTER 4

THE STREAM OF SPEECH

4.1 Every language has a distinctive rhythm with which it
pronounces syllables. Some languages give each syllable the
same importance (like Japanese and Formosan). The English
syllables are different from this type of movements. English
has a stress timed rhythm. Some syllables are pronounced higher,
some lower; some fast, some slow, or some have pauses between
the syllables. These features are characteristic of English
sentences. For instance, the word permit with the stress on the
first syllable is a noun meaning a formal written order; whereas
permit with the stress on the second syllable is a verb meaning
allow. Further, in the utterence

> The man is a professor,

    If we pronounce

    /ðə mænzəprofesər ↘ /

    With the intonation pattern

    /   2   ′3   1 ↘/

    We indicate that this is a normal statement.

    If we pronounce

    /ðə mænz ə profesər ↘ /

    With the intonation pattern

    /   ′3   2   1   ↘ /

    With the strongest stress on "the", we indicate " I am
saying this man, not the other one."

4.11 From the above, we can perceive that this stress may make a meaning difference between two different words or two different sentences otherwise alike.

4.2 Formosan is a tone language. Each syllable has in addition a tone phoneme to carry out its lexical meaning. This characteristic makes each syllable of equal importance in the stream of speech. It is hard for the Formosan speaker to understand the sentence-stress and rhythm before we make an introduction to the supra-segmental phonemes of English.

4.3 In general, the supra-segmentals in English are as follows.

    a. Four stresses relative to each other:

        / ´ / primary

        / ^ / secondary

        / ` / tertiary

        / ˘ / weak

    b. Four pitch levels relative to each other:

        / 1 / low

        / 2 / mid

        / 3 / high

        / 4 / extra high (reserved for 'overloud' situations).

    c. Four junctures:

        1. Three terminal junctures which signal the ends of intonation patterns:

            / ↘ / falling terminal

            / ↗ / rising terminal

            / → / sustained terminal

2. One internal open juncture / + /.

4.31 "Most English speaking people will feel that the difference is stress is more important than the difference in the vowels."[66] That is to say, stress is phonemic in English and carries linguistic significance in a context. "Stress" refers the degree of prominence a syllable has, marked as / ′ /, / ^ /, / ` / and / �‿ / from strong to weak.

4.32 The normal pitch of the voice of the speaker is / 2 /, called mid. Pitch / 2 / is relatively common and serves as a standard of comparison for the others. Pitch / 1 / is somewhat lower. Pitch / 3 / called high, is about as much higher than / 2 / as / 2 / is above / 1 /; / 4 / called extra high is higher than / 3 / . / 4 / is much less fewquent than the other three.

4.33 Some of the breaks in a long utterance will be markedly noticed during the speech. The linguistic term for this phenomena is called juncture. It is the "transition between sounds or between sound and silence in speech."[67] The breaks marking the ends of clauses are clause terminals. They serve as "a means of ending a clause."[68] Such terminals will be found at the end of each clause in an utterance. Clause terminals are of three kinds. / ↘ / occurs at the end of a sentence, it trails away from voice into silence, usually indicates the end of a statement. / ↗ / is slight rise in pitch from the last level heard, but does not go all the way up to the next level. It commonly occurs at the end of yes-or-no question. / → / is the sustained terminal, made by prolonging the last syllable of the clause, may be heard

at the end of a long sentence-subject of a clause. / + / indicates the internal open juncture, contrast <u>night rate</u> with <u>nitrate</u>, there is an internal open juncture between <u>night</u> and <u>rate</u> but not between <u>ni</u> and <u>trate</u>.

4.4 Each language has a small number of contrasting differences in intonation.[69] In English, the typical intonation contour begins on pitch level / 2 /, continues on that level until the last lexical stress syllable, when the pitch rises to / 3 / as that syllable receives the primary / 1 / stress, then falls to pitch / 2 /, or sustains on pitch / 3 /. These may be illustrated as

      (1) / 2   3   1↘/.
      (2) / 2   3   3↗/.
      (3) / 2   3   2→/.

4.5 Robert Lado points out that "sounds have no meaning in themselves; they merely serve to express or identify a unit or pattern which in turn has meaning. As a result, teaching perception precedes teaching the meaning. The student is asked to identify the sound or pattern he hears. This can be best done by comparing one sound or pattern with another."[70]

4.6 In teaching English as a second language, we are concerned to teach the phonemes as they occur in the utterance instead of teaching phonemes in isolation. Hence, teaching consonants and vowels with appropriate intonation and rhythm units is probably more effective than teaching them in detail in isolation.

FOOTNOTES

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TEACHING ENGLISH PHONOLOGY TO SPEAKERS OF
THE FORMOSAN DIALECT OF CHINESE

by

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AN ABSTRACT OF A MASTER'S REPORT

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requirements for the degree

MASTER OF ARTS

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KANSAS STATE UNIVERSITY
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ABSTRACT

Purpose: The purpose of this report is to present the
basic problems in teaching English pronunciation to Formosan
speakers, by means of a contrastive analysis of the phonolo-
gical systems of the two languages. It is also an attempt to
demonstrate the application of linguistics in the development
of more effective and efficient language teaching methods and
materials.

Procedure: The first step in the procedure is to contrast
the phonemic inventories of the two languages. Second, the
contrasts are explored in terms of phonetics and allophonics.
Finally, on the basis of contrasts noted and interferences pre-
dicted, drills are suggested for meeting the problems that
Formosan speakers may be expected to encounter in learning the
pronunciation of English.

Summary of Findings: In the contrastive consonant phoneme
inventory, the consonants of English and Formosan are found to
be slightly different. The differences are accounted for by
the fact that English lacks counterparts for Formosan /p' t' k'
c' c j/, but does have /d f v z š ž θ ð r/ all lacking counter-
parts in Formosan. The greatest difficulty for Formosan speakers
in learning English is found in the fricative series. As for
the vowel phonemes. English makes three discrimination /æ ɨ ɔ /
that the Formosan speaker does not have. English consonant
clusters are predictable problems to Formosans, because Formosan
allows for no consonant clustering within the structure of its

consonant-vowel arrangement.

A brief discussion of English intonation, based on the idea of the practical function of language, is included. This report also suggests a set of drills for English voiced stop /d/, which is identified as a major problem for Formosan learners.