

The Vowel Space of Pangasinan

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Abstract

Languages in the Philippines, though almost all belonging to the Austronesian language family, have unique ways on how sounds and sound patterns are realized. The number of phonemic sounds varies in each language. The Pangasinan language, according to Richard Benton (1971), has five significant vowel phonemes namely /a/, /ɛ/, /ə/, /i/ and /ɔ/ or /u/, and 13 consonant phonemes. The quality of these phonemes changes depending on the phonetic environment.

This study used a scientific approach in describing the vowels of Pangasinan according to their acoustic properties and depending on the environments they are found. These environments include stressed and unstressed positions. A software program was utilized to analyze the individual characteristics of these vowels.

In general, this study contributes to the production and development of educational materials in teaching the Pangasinan language to its native speakers, and even to interested second language learners.

Keywords: Pangasinan Language, Acoustic Phonetics, Second Language Learning and Teaching

Introduction

Each language has its distinct characteristics. Syntactic structures, sounds and sound patterns vary in different languages even those belonging to the same language family. This explains why Philippine languages, even though showing similarities through a number of cognate words (lexical items showing similarities in form and meaning), show individual and unique properties.

Cross-linguistic similarities and differences in phonology, morphology and syntax influence the teaching and learning of one language. Several researches in second language learning and/or acquisition have looked into these linguistic considerations to determine how the learner's first language (L1) can influence and/or interfere in learning a second language (L2) (Archibald, 2001). It is important, therefore, to investigate on the peculiarities of the languages, especially those which are included in the school curriculum to be able to identify possible solutions to problems that can be encountered in language classroom.

The researcher finds it very important to study the local languages, especially the Pangasinan language which happens to be his native language. In this paper, the researcher focused on the Pangasinan language – a northern Philippine language being used and spoken by approximately 1.5 million of the population in the province of Pangasinan. By doing such, knowledge on this language can be shared not only to the native speakers but also to non-native speakers who are interested in learning Pangasinan.

Since different grammar books in Pangasinan have different claims on the number of vowel phonemes present in the language, the study also focused on the description of

the vowels of the language by using a scientific approach. It describes the acoustic properties of the vowels of Pangasinan, particularly the F1 and F2 (first and second formant) frequencies, and provides a vowel space chart of the language.

The research also explores some issues on Pangasinan phonetics and phonology, and its implications in the development of a standard orthography which, hopefully, will help in the development of materials necessary for the teaching and learning of the language.

Literature Review

Different languages have different ways on how sounds are articulated and produced. Two different languages can have different sound system and sound patterns. It is very important for language teachers to know the structure and peculiarities of the languages that they teach in school. The knowledge and skills in both the L1 and the target language are needed to facilitate better language learning and teaching.

The sounds of language are usually grouped into three sound classes: vowels, consonants and glides. These sounds can be distinguished based on articulation and their acoustic properties (Dobrovolsky, 2001). Compared with the consonants and glides, vowels are produced with less constriction of airflow from the lungs out the mouth and/or the nose. The kind of sound produced depends on the placement of the tongue. Vowels are also more sonorous than the consonants. Being more sonorous, these sounds have become the nuclei or the basis in forming the syllables (Fromkin et al., 2010).

Candalene J. McCombs (2006) investigated on the differences of the vowel sounds of Spanish and English language, and its implications in language teaching and learning. In her study, which included Spanish speakers recruited to study in a seminary and required to participate in an intensive English language program, she noted the importance of correct articulation of sounds, specifically the vowel sounds, for better language learning and teaching. She mentioned that “the influence of the first language could support second language learning in areas of structural similarities or thwart language learning in areas of dissimilarity” (n.p). For example, sound production in the target language can be highly influenced (positively or negatively) by the phonological system of the learner’s L1. Hence, intensive knowledge on the phonological system of the learner’s L1 and target language is needed to improve one’s oral language skills.

According to Rev. Fidel of Amurrio, the Pangasinan language has four vowels which are orthographically represented by [a], [e], [i] and [o] or [u] and 14 native consonants. He stated that the vowel sounds /ɔ/ and /u/ using the symbols [o] and [u], respectively, are interchangeable. The use of these symbols depends usually on the preference of the language speaker. For example, /u/ occurs in stressed syllables while /ɔ/ for unstressed syllables (1970, 1-2).

The orthographical symbol [e] is pronounced as /ə/ and is different from the phoneme /i/. He provided a list of minimal pairs to prove this. For example, the pairs *berbér* ‘bind’ vs. *birbír* ‘recognize’ and *peték* ‘straight’ vs. *piték* ‘mud’ proves that /ə/ and /i/ are distinctive phonemes (2).

Richard Benton (1971), a linguist who dealt with the Pangasinan language, stated that native speakers of Pangasinan recognize four significant vowel phonemes represented by as [a], [e], [i] and [o] and 13 consonant phonemes. He also included the phoneme /ɛ/ for words of Spanish origin. These symbols correspond to the sounds /a/, /ə/, /i/ and /ɔ/ or /u/ and /ɛ/, respectively. For most Pangasinan speakers, the vowel /i/ is substituted to the vowel /ɛ/.

To further illustrate this, he provided a detailed chart of the articulatory properties of the vowels of Pangasinan. In this vowel chart, we see the differences on how the vowels in

English and Pangasinan are articulated. For Pangasinan, Benton indicated that a vowel phoneme like /a/ can have three variants or different ways of articulation – [a₁], [a₂] and [a₃], so as with /i/ and /o/.

Table 1: Relative position of English and Pangasinan vowels¹

LIPS	UNROUNDED			ROUNDED
Tongue	Front	Central	Back of Central	Back
HIGH	/i/ [i ₁]	/ɨ/	[e]	/u/ [o ₁]
LOWER HIGH	/I/ [i ₂]		[e]	/U/ [o ₂]
HIGH MID	[E] [i ₃]			[o ₃]
MID	/e/ [E]	/ə/		/o/
LOWER MID			[a ₁]	
LOW	/æ/	/a/ [a ₂]	[a ₃]	/ɔ/

The occurrence of different variants of a phoneme can be attributed to the surrounding environment of a sound, and stress can be attributed to this. Benton noted that one very important difference of Pangasinan vowels to English vowels is that the former retains its quality even in unstressed environments, which is very unlikely to happen in English. Pangasinan vowels, even in unstressed environment, are articulated clearly. This paper will not dwell anymore on the description of the variants of the Pangasinan vowels. It will just investigate on the number of significant phonemes present in the language. The claims of Benton will also be validated by using a more scientific approach.

Methods

The participants in this study are six native speakers of Pangasinan (three males and three females) and ranges from 19-39 years old (mean of age = 25.67). The participants were asked to utter statements which carry in them the target sounds. The researcher first uttered the statements, and the respondents were asked to repeat the statements in their own way without considering how the researcher uttered the statements. Having them repeat the statements in their own way was preferred than asking them to read the statements because the written form may influence the pronunciation of words. The statements were recorded using a software program called Praat. The same program was used to extract the target words and label each sound segment.

¹ This chart was taken from Richard Benton’s *Pangasinan reference grammar* (1971, 6). The English vowel phonemes are in slashes and the Pangasinan vowels are in square brackets.

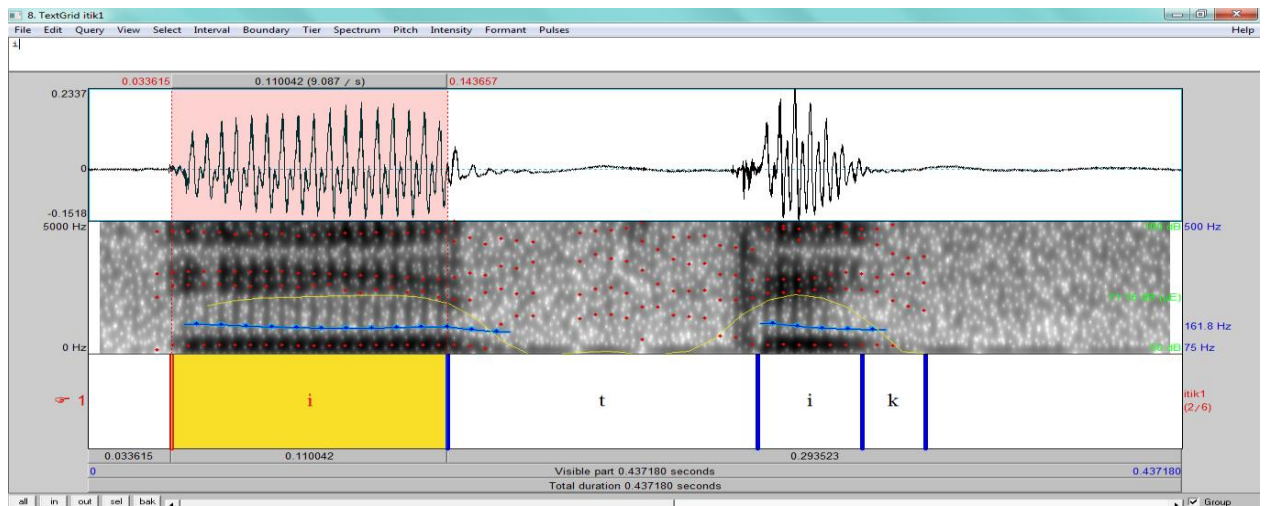


Figure 1: Annotation of the word 'i.tik' 'duck' through Praat TextGrid, including the sound waveform and the spectrogram

Formants, particularly F1 and F2, were measured and plotted using the JPlotFormants to illustrate the vowel space of the language.

Findings

According to Peter Ladefoged (2006), the formant refers to the acoustic resonance of the vocal tract. This feature is considered the most important acoustic property of the vowels. Usually, the first formant (F1) and the second formant (F2) are used to determine the characteristics of the vowels. These features are measured in hertz (Hz). The formants are also usually correlated with the position of the tongue in the process of articulation. The F1 is used to identify whether the sound is open or closed and high or low. As the F1 increases, the mouth becomes more open and the position of the tongue is lower. The F2, on the other hand, is used to identify whether the sound is fronted or backed. In the process of articulation, when the F2 increases, the tongue is fronted and so forth (Ladefoged, 2003).

In the vowel space charts provided below, the large symbols represent the mean of the sound samples. The vowel space chart shows the F1 frequencies in vertical axis and the F2 frequencies in the horizontal axis.

It is clearly shown in the chart that /a/ is a separate vowel phoneme. Among the Pangasinan vowels, /a/ has the highest F1, therefore is the lowest in position among the vowel sounds. In the articulation process, the tongue is lowered and the oral cavity is more open.

As for example, the vowel /a/ is found in the following words.

- (a) *ának* 'children'
*aná*k 'child'

Different from the English mid-central vowel, Pangasinan /ə/ is located in the high-central position. This sound is found in the following words.

- (b) *télek* 'deaf'
telék 'go around'

For some speakers of Pangasinan, the vowel /ɛ/ is a distinctive sound. This sound has been accepted as part of the Pangasinan phonological system due to the presence of loan words in the language. These words can be of Spanish origin or borrowed from Filipino, the national language of the Philippines.

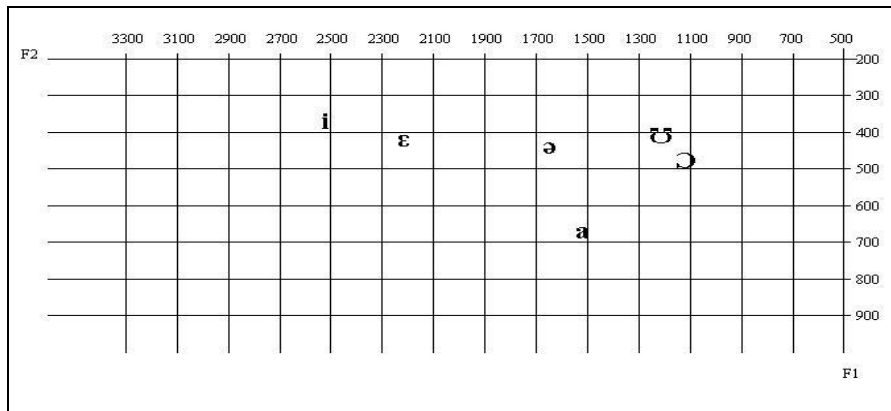


Figure 2: The (stressed) vowel space of Pangasinan

The /ɛ/ sound can be found in the following words.

- (a) *antés* ‘before’
- trése* ‘thirteen’

Considering the vowel space chart above, the vowel /ɛ/ is very close to the position of /i/. In terms of F1 (high/low), /ɛ/ and /i/ are almost in the same position. The F2 (front/back), on the other hand, clearly shows that /i/ is more fronted than /ɛ/.

Based on these observations, it is quite difficult to determine whether these vowels are distinctive at all. At this point, we can say that in stressed environments, /ɛ/ is significantly different from /i/ because /i/ is more fronted than /ɛ/. The /ɛ/ sound in Pangasinan is not the same as mid-front /ɛ/, but closer to the /I/ of English.

- (b) *ítik* ‘duck’
- ilík* ‘paddy rice’

Meanwhile, it is noticeable that the vowels /ɔ/ and /ʊ/ are located at almost exact position in the chart. This supports the idea that sounds /ɔ/ and /ʊ/ are the same sounds in Pangasinan though written differently using [o] and [u] (as shown below) as the orthographic symbols.

- (c) *ótob* ‘distribute’
- olór* ‘carry’
- Lúnes* ‘Monday’

There are slight and insignificant changes in the position of the vowels /a/, /ə/ and /ɔ/ and /ʊ/. The vowel /ə/, for example, is a bit lower in unstressed environment. The vowel /a/ becomes a bit higher in unstressed position compared with the one in the stressed position. Also, the change in the vowel /ɔ/ in unstressed environment is not significant. The vowel /ʊ/ is slightly backed in the unstressed position.

As stated earlier, it is quite difficult to determine whether the vowels /ɛ/ and /i/ are two distinctive vowels. Considering the vowel chart below, /ɛ/ and /i/ are located at almost

the same position in the chart. From here, we can say that /ɛ/ and /i/ are not distinct at all – they sound the same during the production.

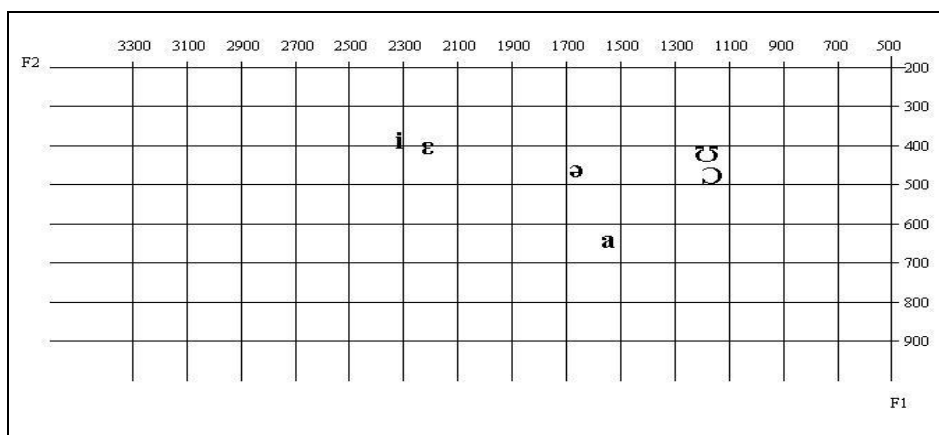


Figure 3: The (unstressed) vowel space of Pangasinan

The changing behaviors of the vowels /ɛ/ and /i/ and /ɔ/ and /ʊ/ are not surprising at all. As Benton noted in his book, some speakers of Pangasinan language use these sounds interchangeably. The vowel /i/ is often used as a substitute to /ɛ/.

Discussion and Conclusion

Based on the data presented in this paper, Pangasinan language has four vowel phonemes namely – /a/, /ə/, /i/ and /ʊ/. The production of the vowels /ɛ/ and /ɔ/ is similar to /i/ and /ʊ/, respectively.

The quality of the vowel sounds changes, though not really significant, depending on their environment particularly in stressed and unstressed position. The front/back and low/high features, as determined by the F1 and F2 frequencies, change depending on the given phonetic environments.

It is worth noting that though there are four significant vowel sounds in the Pangasinan language, there are five graphemes or orthographical symbols being used in the written form. The sounds /a/ and /ə/ have [a] and [e], respectively, while /i/ may have [e] and [i]. The sound /ʊ/ may also have [o] and [u] in the written form.

It is obvious in this case that cross-linguistic similarities and differences, particularly in phonetics and phonology, are some of the challenges language teachers and learners need to overcome. The phonology of L1 can definitely influence and/or interfere the learning of an L2. For example, a second language learner of English whose L1 is Pangasinan need to learn a more complex vowel system. The Pangasinan language has only four vowels compared with English that has more than ten vowels, depending on the variety.

The differences in the phonological system, particularly the vowels, pose problems not only to language learners but also to language teachers, as well. These challenge language teachers to have a deeper understanding of their students' L1 and the language that they teach their students to reduce possible difficulties that an L2 teacher and learner may encounter in the language classroom.

Also, this study presents problems and challenges especially to the development of Pangasinan orthography which for the longest time has not yet been standardized. Are the authorities in the language willing to accommodate a new orthographic symbol [ə] to represent the sound /ə/? Will they retain orthographic symbols [o] and [u], [e] and [i] despite the fact that these sounds do not have significant difference in the language? These are just some of the questions that have to be immediately resolved.

In this year's implementation of the Department of Education Order No. 74 or the Mother Tongue-Based Multilingual Education (MTB-MLE), a helpful orthography of the Pangasinan language is very much needed. A standardized orthography is necessary for the production and development of more instructional materials in the language, and for a successful implementation of MTB-MLE.

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