How Do Foreign Students apprehend Indonesian Speech Sounds? (An Experimental Phonetic Study)

Ichwan Suyudi*, Debyo Saptono
Gunadarma University - Indonesia
*Corresponding e-mail: ichwan@staff.gunadarma.ac.id

ABSTRACT
Prosody refers to intonation of the spoken language in linguistic field. It is a broad concept, consists of some features such as tempo, time, accent, stress, timbre (Arnfield, 1994). These research goals are to (1) know the characteristic of phonetically system such as vocal pronunciation of foreign speakers; (2) describe the foreign speaker pronunciation based on the produced articulation pronunciation and articulation place. The research method is experimental phonetic (IPO approach) using PRAAT software. The result research shows various sounds in some analyzed samples. The foreign learners of Indonesian language often make errors in producing Indonesian words. Those errors are caused by some difficulties, such as (1) difficulty in learning how to produce foreign sounds in speech organ itself; (2) the sound distribution of the proper sound spoken for a word and in the context of the spoken word; (3) the fluency, that is a ability in pronunciation of all set of sound (group of sounds) easily and fast; (4) the relation between conventional pronunciation and spelling.

Keyword: prosody, IPO, PRAAT, foreign student

Backgrounds
The prosody of mother language (LI) often influences the pronunciation of the second language (L2). This influence of LI is called as language transfer. The negative transfer often happens when a person has already had accent of certain language, pronunciation of other language, such as foreign speakers of Indonesian language which often speaks Indonesian language with the accent of their mother languages. This transfer can be in the segmental and super segmental level (prosody) because there are various changes between their mother languages and Indonesian Language.

Sound or super segmental element can be differentiating into some elements, they are the stress about the hard and low of the sound. The distinctive element can be seen from the significant differences between English which distinctively stress, but in Indonesia language, it is not. For example, the word, ‘blackboard’ can be stressed in the black element so that the meaning is ‘the board to write’; if the stress is in the board element, so that the meaning will be ‘the board with black color’. In Indonesian language, the word ‘old people’ can be stressed in the people or old, the meaning will remain the same. The sound with most resonance space is the vocal sound. Thus, the syllabic sound or peak sound is the vocal sound. As an example, the word [and]. This word consists of [d], [a], and [n] sounds. And the [d] and [n] sound are the consonant sounds, while the [a] sound is the vocal one. The [a] sound in that word is the peak syllabi and loudness, because as mentioned above, the [a] sound is as vocal produced to have bigger resonance space.
Goerge (1977) states two anticipation steps in solving the language error, they are giving the time for correction, directing the attitude towards the target language, identifying the undesired form, selecting the undesired form, learning every error, determining the further strategy in improving learning. Other researcher, Lightbown and Nina Spada (1999) decreases the error level in foreign speaker that is to get the proper information about the phonetic at that time.

The foreign speakers learned Indonesian Language is expected have the ability to speak as one of the aspect of fluency in productive language. The spoken language is more function in daily activity. Speaking is language form using articulation or words used to deliver the intention (Hurlock 1981). Dardjowidjojo (1995) frequently examines the error in Indonesian language learning and explains that the error of foreign speakers because of the influence of mother language, minimum acquisition of Indonesian language principles and limitation of Indonesian vocabulary. The frequent errors are the different of utterance tools, the place of articulation and the articulator which is able to make different meaning significantly. This difference does not only refer to meaning of phonemic but more to the difference in phonetic so that it may be new findings in phonetic ability of foreign speaker articulator in Indonesian language learning. This research goal is to know the prosody (super segmental element) transferred into pronunciation of Indonesian language words by the foreign speakers. As detail, these research goals are:

1. To know the phonetic system characteristics of words as the vocal pronunciation by the foreign speakers.
2. To describe the foreign speaker pronunciation based on the produced articulation pronunciation and the place of articulation.
3. To describe the tendency of foreign speaker utterance change in Indonesian language.

Research Methods

The language sound data in the form of wave is analyzed using Praat program used to analysis the phonetic data. PRAAT, used in some previous researches (Veraci, 2011, Pranowo, 1984, Silvana, 2000, et al) is open source software found by Paul Boersma and David Weenink from Phonetic Science Department University of Amsterdam used to analysis the sound reconstruction analysis flexible.

The analysis procedure can be done in ranks. In detail, the sound data of every sound is processed by using Praat program to every data in label level.

The research objects :
1. The sound data or language sound from the informants with recording technique.
2. The foreign speakers learning Indonesian language (BIPA)
3. The high intensity of Indonesian language use
4. The age of 20-40 years old
5. Having complete articulator

The respondents are selected by purposive sampling from the BIPA students. The data processing is done by (1) sound extraction, (2) segmentation, (3) doing the frequency measurement and extracting the result measurement in the data terminal. The frequency measurement is done by adopting the IPO theory (Instituute voor Perceptie onderzoek) (Collier, Cohen, 1990), (4) copying data in Praat Picture or close copy.
The Results and Discussion

This research is focused in the experimental analysis of sound data by using Praat software. The result analysis from the informants is as follow:

- The ‘datang’ <Coming> Analysis
- The ‘gitar’ <Guitar> Analysis

Coming –F2 value, Vertical –F1 Value

<table>
<thead>
<tr>
<th>Informant</th>
<th>F1 (Hz)</th>
<th>F2 (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a43</td>
<td>473.467</td>
<td>1613.94</td>
</tr>
<tr>
<td>de3</td>
<td>473.467</td>
<td>1613.94</td>
</tr>
<tr>
<td>bb1</td>
<td>473.467</td>
<td>1613.94</td>
</tr>
</tbody>
</table>

From the three informants, the pattern close to native is b74 although there is difference in position and height of tongue in beginning and final sounds.

The 54a informant pattern is very different, the height and position of tongue just move a little bit, the height of tongue is between 600-800 Hz, while the range of the height of tongue is from 250 until 1000.

Guitar

<table>
<thead>
<tr>
<th>Informant</th>
<th>F1 (Hz)</th>
<th>F2 (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a43</td>
<td>2349.7</td>
<td>2352.8</td>
</tr>
<tr>
<td>de3</td>
<td>2349.7</td>
<td>2352.8</td>
</tr>
<tr>
<td>bb1</td>
<td>2349.7</td>
<td>2352.8</td>
</tr>
</tbody>
</table>

Based on the figure in the left, the a43 informant pattern is the most close to the Native similarity. While, the de3 informant pattern is the less close to the native similarity.

The sound of /i/ causes the different other informant. It seems that when the bb1 informant gives /i/ sound, the tongue is closer to tongue palate while the native tongue is less close to the palate.

The final sound of /r/ is also by different sound of de3 informant. The /r/ sound is done by moving the tongue getting put but more to the palate. This is different with the native one, the tongue is less closer to the palate.
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- The ‘Insyaf’ <Conscious> Analysis
  Horizontal – F2 Value, Vertical – F1 Value

Based on the figure in the left, it seems that 40d shows the pattern that is almost the same with the Native about the height of tongue and the back and forth movement of the tongue. The 71b informant show the difference, mainly in the first and final sound of /i/ and /ụ/. The ce2 informant is the most different informant among others, mainly in producing sound of /sy/; the tongue is getting out and down compared to the native.

- The ‘pagar’ <Hedge> Analysis
  Horizontal – F2 value, Vertical – F1 value

Based on the figure in the left, there is no pattern from the three informants which is the same with Native. The native positions the tongue getting out and the position of tongue closer to the mouth palate. The d77 informant seems to be different in producing the sound of /r/ by positioning the tongue getting out from the mouth and the height of tongue is getting far from the mouth palate while the native’s tongue is positioned getting out from the mouth and the position of tongue is getting close to the palate.

Results and Discussion

Laksman (1995) explains about the identification of physical sound characteristic in Indonesian language. Laksman explains the formant frequency is the frequency of complex sound waved periodically and strengthened in sound cavity such as pharyngeal, mouth and vocal cord. This formant frequency gives certain patterns about the vocal sound and some consonants, especially the frequency of the two first formants (F1 and F2) (pp 93).
Some researchers are done to get the value of formants in Indonesian language by this following explanation.

<table>
<thead>
<tr>
<th></th>
<th>The physical characteristic of Indonesian language (Lapoliwa)</th>
<th>The physical characteristic of Indonesian language in Batak Toba tribe (van Zanten)</th>
<th>The physical characteristic of Indonesian language in Javanese tribe (van Zanten)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[i]</td>
<td>F1 250 F2 2450 F3 3300</td>
<td>F1 291 F2 2190 F3 3075</td>
<td>F1 319 F2 2174 F3 2912</td>
</tr>
<tr>
<td>[u]</td>
<td>F1 300 F2 1750 F3 2500</td>
<td>F1 377 F2 829 F3 2449</td>
<td>F1 378 F2 856 F3 2515</td>
</tr>
<tr>
<td>[a]</td>
<td>F1 590 F2 1590 F3 2830</td>
<td>F1 746 F2 1365 F3 2362</td>
<td>F1 750 F2 1345 F3 2480</td>
</tr>
<tr>
<td>[o]</td>
<td>F1 410 F2 2080 F3 2920</td>
<td>F1 389 F2 1794 F3 2623</td>
<td>F1 519 F2 1367 F3 2501</td>
</tr>
</tbody>
</table>

The source of this research data is the word by foreign and Indonesian speakers. The vocal spoken can be positioned in the first, medium and final. The example can be seen from the following table.

<table>
<thead>
<tr>
<th>Word</th>
<th>First position</th>
<th>Medium position</th>
<th>Final position</th>
</tr>
</thead>
<tbody>
<tr>
<td>ahad</td>
<td>[a]</td>
<td>[had]</td>
<td></td>
</tr>
<tr>
<td>alfa</td>
<td>[al]</td>
<td></td>
<td>[fa]</td>
</tr>
</tbody>
</table>

The result research can be seen in this figure below.

<table>
<thead>
<tr>
<th>Word</th>
<th>First position F1</th>
<th>Medium position F2</th>
<th>Final position F3</th>
<th>The physical characteristic of Indonesian language (Lapoliwa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[i]</td>
<td>396 F1</td>
<td>1929 F2</td>
<td>710 F3</td>
<td>2095 F1 F2 F3 F1 F2 F3</td>
</tr>
<tr>
<td>[u]</td>
<td>548 F1</td>
<td>1403 F2</td>
<td>1498 F3</td>
<td>367 F1 F2 F3 F1 F2 F3</td>
</tr>
<tr>
<td>[a]</td>
<td>890 F1</td>
<td>1491 F2</td>
<td>1572 F3</td>
<td>770 F1 F2 F3 F1 F2 F3</td>
</tr>
<tr>
<td>[o]</td>
<td>617 F1</td>
<td>1420 F2</td>
<td>1679 F3</td>
<td>1541 F1 F2 F3 F1 F2 F3</td>
</tr>
</tbody>
</table>

Based on the comparison of this result research with Lapoliwa research, the results are as follow.

1. The F1 [i] value in first and final position is closer to the F1 Lapoliwa value, while the F2 value in the medium position is close to the F2 Lapoliwa value.
2. The F1 [u] value is higher than the F1 Lapoliwa value. this means that when producing the [u] sound, the position of tongue is getting farer from the mouth palate compared to the Lapoliwa result research. While, the F2 [u] value is lower than the F2 Lapoliwa value. this means that the tongue moves to go inner compared to the Lapoliwa result research.
3. The F1 [a] value is higher than the F1 Lapoliwa value. this means that when producing [a] sound, the tongue position is getting farer from the mouth palate than the Lapoliwa result research. While, the F2 [a] value in the medium and final position is getting closer to the F2 Lapoliwa value because of the less far differences.
4. The F1 [o] value is higher than F1 Lapoliwa value. this means that when producing the [o] sound, the tongue position is getting farer to the mouth palate.
compared to the Lipoliwa result research. This means that the tongue moves to get inner than the Lipoliwa result research.

5. Overall, only F2 [a] values in medium and final position are the closest to the F2 Lapoliwa value.

Conclusion

Basically, the sound system in Indonesian language is the same with the sound system in English. Although there are some vocals in English which are not in Indonesian language, in English, stress is very important because it influences the meaning of a word, while in Indonesian language, it doesn’t influence the meaning of word. Besides, in English, there is an aspirated sound, meaning that it is the sound with blowing air followed when it is spoken.

The Indonesian language learners often make some errors in pronunciation of Indonesian language words. These errors are caused by some difficulties, are:

1. The difficulty in learning how to make foreign sounds with utterance organ itself.
2. The distribution of sound, that is which sound is proper when spoken in such word or sentence, and in what context the sound is spoken.
3. The fluency, that is the ability to speak all set of sounds (group of sounds) easily and fast.
4. The relation between conventional pronunciation and spelling. The above errors are the most common error faced by the learners.

In learning foreign language, especially Indonesian language, the speaker really has to understand that the language sound system is different with English. There are some sounds in English that are not in Indonesian language, such as vocal, consonants, diphthong, or other form of sounds. Besides, in Indonesian language, stress, length, and intonation don’t give influence to the meaning of word. These problems can be solved by trying to know how the way to speak or pronounce a word and practice to pronounce and also practice to listen how the native speakers pronounce directly or indirectly.

References


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