



software, such comparison will be made between the native speakers' production of vowel sounds and the students'.

Some vowels are more difficult to identify than others (Peterson and Barney, 1952; Harold et al, 1995). In this case, According to Ifon, Hasan, Hastini (2014) Indonesian people often get confused when producing English words, because there are differences between Indonesian and English. The differences are in the number of vowel sounds. Indonesians have six vowel sounds namely /i/, /u/, /o/, /a/, /e/, and /ə/ (Muslich, 2013) while English has twelve vowel sounds; /i:/, /ɪ/, /e/, /æ/, /ʌ/, /ɑ:/, /ɒ/, /ɔ:/, /ʊ/, /u:/, /ɜ:/, and /ə/. The researcher only focuses on Indonesian's vowel sounds because she wants to know the student ability on Indonesian vowel sound by doing a comparing English vowel sounds.

In relation to the problems above, Indonesian learners make errors in producing English sounds as Djajaningrat (2011) stated as consequence of all the difficulties provided by the English pronunciation. Many English language learners as well as the Indonesian learners tend to arouse errors in the articulation of the sounds. Harmer (2001) said that the particular problem of produced vowel sound in pronunciation teaching and learning in student hearing. It means that the students have difficulty to hear pronunciation feature which the teacher wants them to reproduce. Therefore, the writer knows that it is important to measure English vowel sound. It is known that measuring English vowel is not enough by using our hearing. It happens because we are not native speakers of English who can produce sound correctly and clearly.

A number of studies about vowel sound have done by some researchers in many years ago (see Studyawati, 2014; Saito, 2007; Setiorini, 2015; Wahyuni, 2013; Nadziroh, 2015; Fitria, 2014; Jumrina, 2013). Studyawati analyzed the comparison of intelligibility on vowel sound by D3 Students of English Department of Airlangga University which are produced by the English non-native speakers instead of between non-native speakers and native speakers. The result shows that there is a significant difference of the D3 student's intelligibility of vowel sounds produced by native and non-native speaker and there are nine vowel sounds produced by English native speaker that are recognized by the students incorrectly. Saito (2007) analyzed English Vowels for Japanese learners, the vowels /æ/ and /a/. This research involved six Japanese learners of English. The result shows that explicit phonetic instruction is a useful and effective strategy for improving the pronunciation of Japanese learners of English in the target language, which ultimately minimizes the salience of their foreign accent and facilitates more effective communication with native speakers. Setiorini (2015) analyzed English vowel /æ/ and /e/ quality based on the acoustic characteristics through their formant frequencies and the correlation between the average formant frequency of native speaker and the articulation of English vowel sound to know their vowel quality. The result shows that the timbre of EFL university student of UIN Sunan Ampel Surabaya vowel (vowel quality) /e/ is same as /æ/. Most of them make large jaw opening with F1 around 700 Hz like /æ/. Wahyuni (2013) she conducted a research under the title Error Analysis of English

Students' Pronunciation at SMPN I Pamekasan. This research was aimed to find out what types of errors made by the students on pronouncing English words and to find out the most dominant errors made by the students in pronouncing English words. This research was conducted at SMPN 1 Pamekasan and 52 students were taken as the sample. From the research conducted, it can be concluded that the most dominant in making errors is in pronouncing vowel sounds. Nadziroh (2015), she analyzed Pronunciation Errors Made by Fourth Semester Students of English Department at IAIN Tulungagung. The result shows that fourth semesters of English department at IAIN Tulungagung have difficulties in pronouncing English vowels rather than the consonant. Fitria (2014) analyzed the errors of English pronunciation on vowels made by the second year students at SMPN 2 Menganti, Gresik. The result shows that majority of the students of SMP N 2 Menganti made pronunciation errors on diphthong [au]. The average of the students made those errors was about 93,33%. Based on the data about the sources of students' pronunciation on vowels, it showed the common source of student's errors on vowels was because of the interference from mother tongue (Inter language). Most of the students' pronouncing English words as written, substituting short vowels for long vowels, substituting long vowel for short vowel, and substituting vowels for diphthong. Jumrina (2013) she analyzes under the title An Analysis of Students' Pronunciation Errors in English. This research was conducted toward Muna students in English department of Gorontalo state University. The result of the analysis shows that there are three kinds of errors

made by the subjects such as shortening, lengthening and substitutions. The causes of pronunciation errors made by the subjects are interlingual transfer that related to the first language interferences and intralingual transfer that caused by unsuccessfully in learning second language and the lack of awareness about English phonetics.

Based on the previous studies that have been mentioned, the writer is interested in analyzing acoustic phonetic in pronouncing vowel sound. Most previous studies analyzed all kinds of vowel sounds or consonant. They only used some vowel sounds. The data also are different from previous studies. Therefore, this research will be different from others because the writer chooses to analyze in pronouncing of English vowel sounds that have no Indonesian equivalent. The data will be Indonesian learners as a English Language especially in the three different level students of English Department at State Islamic University (UIN) of Sunan Ampel Surabaya, because according to the handbook of UIN Sunan Ampel Surabaya (2014), the students of English Department starts learning pronunciation in the second semester. Therefore, the writer chooses second, fourth and six semesters because she wants to know whether the students have acquired pronunciation or not. Beside that, students may not know how to pronounce the sounds or particular sounds of English in natural speech, sounds combinations with putting particular sounds in particular positions. They may also have trouble in differentiate two words which has slightly similar sounds. Those difficulties faced by students are what become mistakes or errors. The writer knows that reason by





**Acoustic phonetic:** Phonetics is the study of how the language sounds are formed, in the form of vibration frequency, intensity, and timbre, and how the sounds of language can be received by the ear (O'Grady and Archibald, 2000).

**Vowels:** defined in term of position of the tongue and the shape of lips (Poole).

**Three different level students:** those students are from second, fourth and sixth students from English Department at UIN Sunan Ampel Surabaya.

**Formant:** the over one pitches that give its distinctive quality in sound (Lagefoged and Johnson, 2011).

**Spectrogram:** the display produces of component of sound in computer program (Ladefoged and Johnson, 2011)

**Vowel Quality:** The timbre of a vowel (Ladefoged and Johnson, 2011)

**Praat Software:** computer software that is used for analyzing vowel speech ([www.praat.org](http://www.praat.org)).