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Reduce The Foreign Accent of Indonesian Arabic Learners Through A Minimal Pairs Strategy

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Abstract

The purpose of this study is to discuss how to use the minimal pairs strategy to help students improve their pronunciation abilities. The Research and Development (R&D) and the Quasy Experimental Non-Equivalent Control Group Designs were combined in this study (QENECGD). The R & D method was used to develop a model for implementing the minimal pairs strategy. The QENECGD method was used to evaluate students' final performance following the implementation of the minimal pairs strategy. The study enrolled 50 students who took Basic Arabic Language Proficiency course. Twenty-five students were assigned to the minimal pairs strategy, while the remaining twenty-five served as the control class. All students were required to read an Arabic script during the pre-test and post-tests. The results of these readings were analyzed for pronunciation accuracy using the provided reading script. The Bogaert scale was used in conjunction with the non-parametric test. The findings indicated that the minimal pairs strategy affected students' attainment of a foreign accent level. Additionally, statistical analysis enables the experimental and control groups to be distinguished. Furthermore, the N Gain Score statistic demonstrates the effectiveness of the minimal pairs method.

Keywords: Learners of Arabic; foreign accent level; minimal pairs; non-parametric test.

Introduction

Non-Arabic speakers studying Arabic frequently face various difficulties, including learning to write letters from right to left. Their initial, middle, and final words influence Arabic writing and change letters.[1,2] Some pronunciation

[1] Mohammed Shareef, D. *Context and Linguistic Skills Factors Affecting the Pronunciation of Arabic Proper Names in Speakers of Bahdini Kurdish*. (Advances in Language and Literary Studies 8, no 6 2017): 118.

of Arabic phonemes may challenge non-Arabic people to learn Arabic.[3,4] Pronouncing 29 phonemes in Arabic must be mastered. For the Indonesian people, one of the most challenging phoneme groups to pronounce is the affricative phoneme group, specifically (ذ/Dh/, س/s/, ص/S/, ش/Sh/, ظ/TH/, ث/Th/, and ز/Z/). In this affricative group, س/s/ occurs in Indonesian consonants and is easily pronounced in Arabic words or sentences by Indonesian speakers. The remaining phonemes are typically pronounced similarly to the phoneme س/s/.

Learning a second language or foreign language (L2) is challenging for both language learners and teachers. In parts of Indonesia, Arabic is considered a substantial foreign language that people need for various reasons. First, many Indonesian people study Arabic before going to Arabic countries for work and business. Second, in most institutions, such as Islamic boarding schools in Indonesia, there is a rule (specific institution) where Arabic is usually needed as a daily language. Third, Arabic has a strong religious link as the language of the Holy Qur'an, which every single Moslem has to read. Above all the reasons for learning Arabic, communicating in Arabic is a priority over the other skills.

Another reason Indonesians learn Arabic is that many manuscripts are written in Arabic characters but are read in indigenous languages such as Makassarese and Buginese. The intellectual property and indigenous knowledge in these texts must be safeguarded and used as a reference in knowledge development. Indonesians should be able to comprehend and read Arabic characters. The following are illustrations of manuscripts written in Arabic but read in Makassarese.

Figure 1. Manuscripts are written in Arabic but read in Makassarese

[2] Mosa, A., & Katsuhiko, K. *A Way Of Supporting Non-Arabic Speakers In Identifying Arabic Letters And Reading Arabic Script In An E-Learning System.* (Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, LNICST 138, no 6 2014):123–129

[3] Abu-Bakar, K., & Abdullah, M. F. *Tekanan Perkataan Arab Sebagai Bahasa Asing Dalam Kalangan Penutur Melayu.* (GEMA Online Journal of Language Studies 18, no 1 2018): 87–105

[4] Foster, M. S. *Visual Speech Perception of Arabic Emphatics and Gutturals.* (ProQuest Dissertations and Theses 2016): 170

Enabling students to communicate in Arabic presents a challenge for both students and teachers, even more so in a non-native Arabic environment such as Indonesia. The majority of students find speaking Arabic extremely difficult, particularly in conversation. This study aims to determine the use of minimal pairs on the pronunciation ability of Indonesian Arabic learners. This research is necessary because students who remain and live in Indonesia are surrounded by people who do not speak Arabic.

The research question is whether the minimal pair strategy can help Indonesian Arabic learners improve their pronunciation mastery (decreasing foreign accent) and Arabic vocabulary. The research aims to identify teaching strategies and techniques and contribute instructional materials that will enable teachers to provide activities for teaching and learning Arabic pronunciation.

The researcher has used a combination method of Research and Development (R&D)5 and Quasy Experimental Non-Equivalent Control Group Designs (QENECGD) method in this study[6]. The researcher used the R&D to compile minimum pairs of material.[7,8] The minimum pairs material is used as a treatment instrument to improve pronouncing affricative phonemes in Arabic. QENECGD method was used to measure learning outcomes after the researcher applied the minimal pairs strategy to learn Arabic.

In short, it can be said that the R&D method is used to prepare a learning model in implementing the minimal pairs strategy. The QENECGD method is used to measure the effectiveness of the minimal pairs model in improving students' skills in pronouncing Arabic affricative phonemes.

In this method, the researcher used several steps to compile a learning scenario and the material used in implementing the minimal pairs strategy. The stages of the activity are as follows:

1. Perform a needs analysis. At this stage, the researcher found the difficulty of Indonesian students studying Arabic in pronouncing affricative phonemes. The researcher hypothesizes that this difficulty is because Indonesian only has one affricative phoneme س/s/ while in Arabic the seven affricative

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[5] Yusring Sanusi Baso and Andi Agussalim, *Computerization of Local Language Characters* (International Journal of Advanced Computer Science and Applications(IJACSA) 12, No 12 2021): 76-84

[6] Vatalaro, A., Culp, A. M. D., Hahs-Vaughn, D. L., & Barnes, A. C. *A Quasi-Experiment Examining Expressive and Receptive Vocabulary Knowledge of Preschool Head Start Children Using Mobile Media Apps.* (Early Childhood Education Journal 46, no 4 2018): 451–466

[7] Ahmed, E. (2015). *Portable Technology on L2 Learning Proficiency in Listening and Reading At the Defense Language Institute Foreign Language Center*. (ProQuest Dissertations and Theses, April 2015): 139

[8] Martin, K. I. *L1 impacts on L2 component reading skills, word skills, and overall reading achievement.* (ProQuest Dissertations and Theses, 2015): 348

phonemes are ذ/Dh/, س/s/, ص/S/, ش/Sh/, ظ/TH/, ث/Th/, and ز/Z/. Therefore, changing the habit of students pronouncing one affricative phoneme into seven phonemes requires serious practice. Thus, in this needs analysis, the researcher only focuses on preparing the minimum pairs for affricative phonemes, namely:

a. A1 = ذ/Dh/ A5 = ظ/TH/
b. A2 = س/s/ A6 = ث/Th/
c. A3 = ص/S/ A7 = ز/Z/
d. A4 = ش/Sh/

2. Compile a list of minimal pairs of vocabulary in Arabic, for example:
   a. نسر /na**s**run/ means eagle
   b. نثر /na**Th**run/ means prose
   c. نصر /na**S**run/ means victory
   d. نذر /na**Dh**run/ means vow
   e. نظر /na**TH**run/ means consideration
   f. نزر /na**Z**run/ means nazar
   g. نشر /na**Sh**run/ means spread
3. Test the one-on-one minimal pairs vocabulary list
4. Revised minimal pairs of vocabulary lists according to feedback in a one-on-one test
5. Small group test of minimal pairs of vocabulary lists
6. Revised minimal pairs of vocabulary lists according to feedback in the small group test
7. Setting up a focus group and homegroup method to practice pronouncing minimal pairs,
8. The final product lists minimal vocabulary pairs and delivery techniques to students in the study group.

Fifty participants took part in this study; they were Indonesian learners of Arabic with a mean age of 18 years. They were involved in a course, namely Basic Arabic Language Proficiency. The researcher taught all of the participants in this study at that time.

The researcher constructed a formal instructional package for the instructional treatment. The package reflected an approach to teaching pronunciation, which consisted of minimal pairs and traditional instruction. Furthermore, the researcher created an experimental group and a control group in the Hasanuddin University Learning Management System (SIKOLA with URL https:// unhas.ac.id). In the experimental group, a list of vocabulary and formal instructional packages which consisted of minimal pairs was prepared. Meanwhile, the control group also prepared a vocabulary list, but which words

were included in the minimal pairs category was not shown. In both groups, participants are directed to do oral practice.

The second step of this exercise is writing at least five sentences that they use every day. They must read the fifth sentence aloud at least three times a day. Furthermore, these sentences are submitted through SIKOLA every day. The sentences that they sent to SIKOLA are based on such a topic. For example, on Sunday of the first week of August 2020, the topic of the student is room, so that these students should submit sentences regarding the room. This activity means that this student performs the vocabularies they accepted from interactive online exercise in SIKOLA of Hasanuddin University.

Pre-course and Post-course Recording

A pre-course and post-course recording were conducted to assess the impact of formal instruction (minimal pairs strategy). As the study attempted to examine the effect of the minimal pairs strategy, post-course recording of subjects took place immediately after a formal instruction course was conducted. Both pre-course and post-course recording consisted of oral production tasks.

The participants recorded by themselves while they were reading the Arabic written script. Their recordings were addressed to the two natives of Arabic (from Sudan) who are taking master's and doctoral degrees in the faculty of Animal and Husbandry in the Hasanuddin University to rate whether the sentences they produce are accented or not (foreign accent or not).

The researcher asked participants to record their reading twice. The first recording (Pre-test) was conducted on September 16, 2020. The second recording (Post-test) was carried out on October 13, 2020. The period between the two recording times was 30 days. This period was chosen because the two natives of Arabic could only participate during this period. For this reason, the experimental group and control group were compared to answer the question of whether a minimal pair strategy can enhance the pronunciation mastery of Indonesian learners of Arabic or not.

A foreign accent is one of the learning outcomes targeted in second language learning. Foreign accents help second language learners avoid mispronouncing a word, resulting in their interlocutor misinterpreting their message. Some studies have examined various techniques for measuring foreign accents.[9,10,11,12] The less of a foreign accent a second language learner has, the more easily his pronunciation will be understood in the target language.

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[9] Arboleda, A. A. *The Accented EFL Teacher: Classroom Implications*. (Profile: Issues in Teachers' Professional Development 14, no 2 2012): 45–62.

[10] Brosseau-Lapré, F., & Kim, W. H. *Identification of foreign-accented words in preschoolers with and without speech sound disorders*. (Journal of Speech, Language, and Hearing Research 63, No 5 2020): 1340–1351

Two native Arabic speakers (from Sudan) rated and judged the speech samples regarding this research. They were born in Sudan and are doing postgraduate study at Hasanuddin University. The two Arabic speakers were asked to jointly evaluate the foreign accent of the participants' pronunciation. The two of them could discuss to rate the foreign accent level of the participants' pronunciation. They were asked to rate all samples for accent, using the following 5-point scale that was used in this study:13

1. Very strong foreign accent: definitely non-native
2. Strong foreign accent
3. Noticeable foreign accent
4. Slight foreign accent
5. No foreign accent at all: definitely native

On the other hand, all students are also tested via multiple choices representing Arabic vocabularies. These vocabularies are taken from an online exercise at the SIKOLA of Hasanuddin University.

The data in this study are ordinal in nature. As a result, the pre-test and post-test data analysis procedures were as follows:

1. Descriptive analysis,
2. Wilcoxon test. The Wilcoxon test is used to determine whether or not the minimal pairs strategy improves the pronunciation of Arabic learners. The Wilcoxon test is used in this study to determine whether or not there is a difference in the mean of two paired samples
   a. If the Negative Ranks are 0 (zero) for N, Mean Rank, and Sum of Rank, then the 0 (zero) score indicates no decrease from the Pre-test to Post-test scores, or the Post-test scores are more significant than the Pre-test scores.
   b. Positive Ranks is the difference between pre-test and post-test.
   c. Ties are the similarity in value between Pre-test and Post-test.
   d. The basis for decision making in the Wilcoxon test is if the Asymp Sig score is < 0.05, then there is an effect of the minimal pairs strategy in improving student pronunciation, and if the Asymp Sig > 0.05, it is considered that the minimal pairs strategy does not affect.
3. Mann Whitney test. The researcher substituted the Mann-Whitney test for the independent samples t-test. The objective is to determine whether the

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[11] Kang, O., Ph, D., Dronjic, V., Ph, D., Plonsky, L., Ph, D., Abercrombie, S., & Ph, D. *Native And Non-Native Raters Of L2 Speaking Performance: Accent Familiarity And Cognitive Processes*. (May 2018)

[12] Schmale, R., Hollich, G., & Seidl, A. *Contending with foreign accent in early word learning.* (Journal of Child Language 38, No 5 2011): 1096–1108

[13] Bongaerts, T., van Summeren, C., Planken, B., & Schils, E. *Age and Ultimate Attainment in The Pronunciation of A Foreign Language*. (Studies in Second Language Acquisition 19, no 04 1997): 30-41

means of the two unpaired samples differ. Additionally, this test is used to address research question number two.

a. If the asymp Sig value < 0.05, there is a difference in the average results between the experimental and control classes.
b. If the asymp sig value > 0.05, then the two classes have no difference in the average learning outcomes.

4. Test of the N-Gain Score. The N-Gain Score test was used to address the study's third question. The N-Gain Score test is used to determine the efficacy of an experimental method. In the context of this research, interpretation category of the effectiveness of N-Gain are:
   a. < 40 is not effective
   b. 40 -55 is less effective
   c. 56 - 75 is quite effective
   d. > 76 is effective

Specific findings indicate a correlation between the degree of an L2 foreign accent and inevitable factors. One of them is specialized training via formal instruction. Due to the paucity of evidence indicating that the amount of formal instruction affects the degree of L2 foreign accent. As a result, the hypothesis is that incorporating specialized training in the perception and production of L2 sounds into classroom instruction in the L2 will significantly affect the accuracy of L2 production.

Additionally, the following factors have been identified as influencing the degree of L2 foreign accent: age of learning, duration of residence in an L2 speaking country, motivation, and L1 use.

According to some studies, complete mastery of an L2 becomes impossible if learning begins during a critical period. According to these researchers[14,15,16,] the earlier a second language learner acquires an L2, the more pronounced the second language will be. Their study classified subjects according to the age at which they first arrived in a predominantly L2-speaking country.

Another researcher[17] concluded that the Critical Period influences foreign accents because it is associated with age-related loss of neural plasticity or some type of developmental neuro-functional reorganization. Additionally,

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[14] Bongaerts, T., van Summeren, C., Planken, B., & Schils, E. *Age and Ultimate Attainment in The Pronunciation of A Foreign Language*. (Studies in Second Language Acquisition 19, no 04 1997): 30-41

[15] Martin, K. I. *L1 impacts on L2 component reading skills, word skills, and overall reading achievement.* (ProQuest Dissertations and Theses, 2015): 348

[16] Patkowski, M. S. *Age and accent in a second language: A reply to James Emil Flege*. (Applied Linguistics 11, No 1 1990): 73–89

[17] Moyer, A. *Ultimate attainment in L2 phonology*. (Studies in Second Language Acquisition, 21, March 1999): 81–108

he/she stated that the degree of foreign accent is determined by the nature and extent of interaction between the L1 and L2 systems during this development period in the L2 environment.

The findings of the three studies indicate a correlation between the age of learning and the degree of L2 foreign accent in human speech learning, though the age limits of the putative critical period vary. However, when it comes to the age of learning Bongaerts[18] and Piske et al[19], take opposing positions. Bongaerts et al, identified adult native Dutch English learners who, despite a late start, acquired a foreign British English accent in pronunciation. These students had primarily acquired their English in a formal setting during their senior year of high school. They were not consistently exposed to large amounts of input from native English speakers until around 18 or when they entered university.

The studies mentioned above indicate that early learners speak L2 with a less foreign accent than late learners in terms of age of acquisition. Furthermore, only a few studies have provided convincing evidence or data to support the claim that L2 speech will be automatically accent-free if learned before the critical period (6/15 years) and will have a foreign accent if learned after puberty. However, I believe that adult learners of L2 can achieve native-like performance if they have a solid motivation to produce L2 in that skill, or if they receive input primarily from native speakers, or if they receive specialized training (formal instruction) in that skill (pronunciation, lexis, grammar, discourse). Additionally, it appears as though factors other than the age of learning, such as length of residence in an L2 speaking country, amount of L2 use, and motivation, all influence the degree of L2 foreign accent.

The studies mentioned above indicate that early learners speak L2 with a less foreign accent than late learners in terms of age of acquisition. Furthermore, only a few studies have provided convincing evidence or data to support the claim that L2 speech will be automatically accent-free if learned before the critical period (6/15 years) and will have a foreign accent if learned after puberty. However, I believe that adult learners of L2 can achieve native-like performance if they have a solid motivation for produce L2 in that skill, or if they receive input primarily from native speakers, or if they receive specialized training (formal instruction) in that skill (pronunciation, lexis, grammar, discourse). Additionally, it appears as though factors other than the age of

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[18] Bongaerts, T., van Summeren, C., Planken, B., & Schils, E. *Age and Ultimate Attainment in The Pronunciation of A Foreign Language.* (Studies in Second Language Acquisition 19*,* no 04 1997): 30-41

[19] Piske, T., MacKay, I. R. A., & Flege, J. E. *Factors affecting degree of foreign accent in an L2: a review.* (Journal of Phonetics 29*,* no 2 2001): 191–215

learning, such as length of residence in an L2 speaking country, amount of L2 use, and motivation, all influence the degree of L2 foreign accent.

Piske et.al claimed that there is significant evidence or correlation between the degree of L2 foreign accent and length of residence. Their study examined the correlation between the native Italian subject's overall degree of L2 foreign accent and age of learning, length of residence in Canada, Italian and self-reported ability in Italian.

Piske et al.'s study showed that the correlation between the degree of L2 foreign accent and length of residence remained significant when the effect of L1 use and L1 ability were partially out separately. However, the correlation became non-significant when the effect of age of learning was removed. So, they stated that the apparent effect of length of residence on L2 foreign accent is not due to the ameliorative effect of added years on speaking English but rather is an indirect consequence of the relationship between the length of residence and age learning. So, it is clear from this view that length of residence is another factor other than age, influencing foreign accents.

In contrast, James Emil Flege[20] had a different view in which he claimed that length of residence does not affect the degree of L2 foreign accent. He examined two groups of Taiwanese learners of English differing in length of residence (1.1 vs. 5.1 years). The foreign accent rating obtained for these two groups did not differ significantly. He interpreted the evidence supporting the hypothesis that after a rapid initial phase of learning, length of residence does not affect the degree of L2 foreign accent of an individual who began learning the L2 as an adult.

From the above studies, not every study showed a significant effect of length of residence on the degree of L2 foreign accent. In those studies where a length of residence effect was found, length of residence is a less significant predictor of the degree of L2 foreign accent than the learning age.

Motivation is another factor that has been explored affecting the degree of foreign accents. Bongaerts et.al[21] examined a group of 11 late Dutch learners of English who had been identified as highly motivated and successful English learners by university-based EFL experts. All but two of these subjects were university-level English teachers who considered it necessary to speak English without a foreign Dutch accent. Five of the 11 did not receive ratings comparable to those obtained for a control group of native English speakers. Unfortunately, they did not assess how much L2 input the subjects had really

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[20] James Emil Flege. *Factors affecting degree of perceived foreign accent in English sentences*. (The Journal of the Acoustical Society of America 84, no 1 1988): 70–79

[21] Bongaerts, T., van Summeren, C., Planken, B., & Schils, E. *Age and Ultimate Attainment in The Pronunciation of A Foreign Language*. (Studies in Second Language Acquisition 19, no 04 1997): 30-41

received and when they were first consistently exposed to the L2. Other studies, Moyer[22] recruited 24 late native English speakers of German. All were graduate students in German who had taught German in undergraduate degrees. Moyer hypothesized that these late learners demonstrated native-like performance because of their high degree of professional motivation. A strong correlation was found between the variable professional motivation and the degree of L2 foreign accent. Like Bongaerts et al., it is difficult to assess how much L2 input the subject had received and when they were first consistently exposed to the L2.

Therefore, it can be concluded that factors like professional motivation or strength concern for L2 pronunciation accuracy do not automatically lead to accent-free L2 speech. It can be stated that late learners will be able to attain a native-like pronunciation of the L2.

The fourth factor that may significantly correlate with the degree of L2 foreign accent is first language use.[23,24,25,26,27,28,29,30] The interaction of L1 and L2 systems[31] in bilinguals by assessing the effect of L1 use on L1 and L2 production accuracy was investigated. They implemented a new design feature to examine bilinguals who used their L1 regularly in a bilingual setting: Otavalo, Ecuador. Thirty native Quichua speakers who were matched for the age of Spanish acquisition were recruited from three groups differing in self-reported L1 use. The three groups repeated aurally presented sentences from their L1 and L2. Monolinguals listeners from each language group rated the blocked, randomly presented sentences for the degree of foreign accent. The group with

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[22] Moyer, A. *Ultimate attainment in L2 phonology*. (Studies in Second Language Acquisition, 21, March 1999): 81–108

[23] Bongaerts, T., van Summeren, C., Planken, B., & Schils, E. *Age and Ultimate Attainment in The Pronunciation of A Foreign Language*. (Studies in Second Language Acquisition 19, no 04 1997): 30-41

[24] Felps, D., Bortfeld, H., & Gutierrez-Osuna, R. *Foreign accent conversion in computer assisted pronunciation training*. (Speech Communication 51 no 10 2009): 920–932

[25] Flege, James E., & Fletcher, K. L. *Talker and listener effects on degree of perceived foreign accent*. (The Journal of the Acoustical Society of America 91 no 1 1992): 370–389

[26] Lev-Ari, S., & Keysar, B. *Why don't we believe non-native speakers? The influence of accent on credibility*. (Journal of Experimental Social Psychology 46 no 6 2010): 1093–1096

[27] Piske, T., MacKay, I. R. A., & Flege, J. E. *Factors affecting degree of foreign accent in an L2: a review*. (Journal of Phonetics 29, no 2 2001): 191–215

[28] Thompson, I. *Foreign Accents Revisited: The English Pronunciation of Russian Immigrants*. (Language Learning 41, no 2 1991): 177–204

[29] Weber, A., Broersma, M., & Aoyagi, M. *Spoken-word recognition in foreign-accented speech by L2 listeners*. (Journal of Phonetics 39, no 4 2011): 479–491

[30] Yuan, J., Jiang, Y., & Song, Z. *Perception of Foreign Accent in Spontaneous L2 English Speech*. (Proceedings of Speech Prosody100884 2010):1-4

[31] Guion, S. G., Flege, J. E., & Loftin, J. D. *The effect of L1 use on pronunciation in Quichua–Spanish bilinguals*. (Journal of Phonetics 28, no 1 2000): 27–42

the highest L1 use had stronger Quichua accents than the group with the lowest L1 use for the Spanish sentences.

On the other hand, L1 use did not affect the rating of the Quichua sentences. They found that L1 use affected the L2 but not the L1 speech of Quichua-Spanish bilinguals who used their L1 regularly in a bilingual setting. In short words, regular L1 use will lead to a stronger L2 accent.

In addition, the influence of language use patterns on the degree of foreign accent was examined by Thompson,[32] who asked native speakers of Russian to estimate the percent of the time they used English (at work, at home, and with friends). She found that English-language use showed a significant simple correlation with the degree of foreign accent, but was not identified as a significant predictor in a multiple regression analysis, because it was confounded with the age of learning. Interestingly, she did not observe an influence of L2 use on the native Russians' English pronunciation. The native Russian subjects in her study had professional speaking proficiency in their L1, despite the length of residence in the US ranging from 2 to 42 years. According to her, the subjects continued high level of proficiency might have been responsible for the detectable presence of L2 foreign accent in the speech of two early bilinguals with an age of learning of 4 years. However, she suggested that "a difference must be noted between subjects who have maintained their mother tongue and those who have lost it when estimating accent retention in the second language (p.200)".

A minimal pair comprises two words with very similar sounds but distinct meanings. For instance, pat and pad may have a similar sound, particularly to non-native English speakers. In phonology, minimal pairs are pairs of words or phrases in a spoken or written language that differ in only one phonological element, such as a phoneme, toneme, or chroneme, but have distinct meanings.[33]

Several studies have examined the importance of phoneme material taught in second language learning. Students' knowledge of phonemes helps them to memorize vocabulary and pronounce it correctly. The researchers used minimal pairs to train second language learners in pronouncing new vocabulary.[34,35,36,37] There is no evidence of minimal pair research involving

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[32] Thompson, I. *Foreign Accents Revisited: The English Pronunciation of Russian Immigrants*. (Language Learning 41, no 2 1991): 177–204

[33] Martin, K. I. *L1 impacts on L2 component reading skills, word skills, and overall reading achievement.* (ProQuest Dissertations and Theses, 2015): 348

[34] Bulgantamir, S. *Acoustic Analysis on the Palatalized Vowels of Modern Mongolian.* (Advances in Language and Literary Studies 6, no 6 2015): 1–5.

[35] Foster, M. S. *Visual Speech Perception of Arabic Emphatics and Gutturals*. (ProQuest Dissertations and Theses 2016): 170

Indonesian Arabic learners. As a result, this research is expected to serve as a reference for non-Arabic speakers learning Arabic.

All of the above studies only focused on how the non-native acquired native-like performance of English. Hence, no study explored the degree of the foreign accent of L2 learners of Arabic. Because of this limited data, one aim of this study is to provide exploratory data on the degree of the foreign accent of Indonesian adult learners of Arabic, with particular attention to affricative consonants (ذ/Dh/, ص/S/, ش/Sh/, ظ/TH/, ث/Th/, dan ز/Z/), which disappear in Indonesian.

In addition, based on past research where there is no specific study of the relationship between two languages, Indonesian as L1 to Arabic as L2, especially at the phonological level, this study tends to fill the gap in this field. Study at the phonological level will be very important because the two languages have many differences in linguistic aspects such as phonology and morphology and the writing system. This study will also be of value because many Indonesians study Arabic to use this language in their work, in oil companies and hospitals in the Middle East, and Arabic is one of the international languages used in the United Nations. It is also used in trade in Indonesia, especially in Indonesian-Arabian towns.

This study will also be beneficial for Arabic teachers to inform them of the similarities and differences between the two languages, which will enable them to teach Arabic more effectively and provide the knowledge of possible areas of difficulty. Students will similarly benefit from the knowledge of their teachers, which will inform their teaching methodology.

The present study attempts to find the effect of the minimal pairs strategy on the students' pronunciation of Arabic affricative phonemes. Also, this study will find out the difference in participants' mean learning outcomes between the experimental and control groups. another target of this study is to find out whether the strategy of minimal pair learning effectively at improving the pronunciation of Indonesian Arabic learners or not

Finding and Discussion

To answer the research questions, the researcher analyzed the raw scores of the number of vocabularies that all participants answered via multiple choices. The result shows that all participants who engage in this online exercise

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[36] Guskaroska, A. *Asr-dictation on smartphones for vowel pronunciation practice.* (Journal of Contemporary Philology Ss Cyril and Methodius University B Koneski Faculty of Philology 3, no 2 2020): 45–61

[37] Wedel, A., Jackson, S., & Kaplan, A. *Functional Load and the Lexicon: Evidence that Syntactic Category and Frequency Relationships in Minimal Lemma Pairs Predict the Loss of Phoneme contrasts in Language Change.* (Language and Speech 56, no 3 2013): 395–417

and submitted five sentences daily scored high. They almost answered all questions.

However, regarding pronunciation, there is a different result. The researcher analyzed the score recorded by using SPSS 26. In this measurement, the 5-point scale was used, and short notation replaced each of the targeted Arabic phonemes to simplify the analysis in SPSS 26. The researcher presents the analysis finding for each phoneme to answer three research questions.

5.1. A1 = ذ/Dh/

The statistical analysis results answered the research question that applying minimal pairs affected students' skills in pronouncing the phoneme ذ/Dh/for this phoneme. The average post-test score for students in the experimental class was 4,04, while the average for students in the control class was 1,96. A score of 4,04 falls between a four (slight foreign accent) and a five on the scale (no foreign accent at all or definitely native). In other words, the experimental class students' ability to pronounce this phoneme in Arabic has lost its Indonesian accent (foreign accent) but has not yet reached parity with native Arabic speakers' pronunciation.

On the other hand, the control class's post-test results reached only 1,96. This score ranges between one (very strong foreign accent or definitely non-native) and two on the scale (strong foreign accent). With a score of 1,96, students' pronunciation of the Arabic phoneme ذ/Dh/ retains a strong Indonesian accent (foreign accent).

The following Wilcoxon test results show that for N, Mean Rank, and Sum of Ranks, the negative difference between the Pre- and Post-Test phonemes ذ/Dh/ is zero. A score of zero indicates that there was no change in the Pre-Test to Post-Test scores. Positive Ranks, or the difference in rank between the Pre- and Post-Test phonemes ذ/Dh/. The table contains 25 positive data points (N), indicating that 25 students improved their mastery of the ذ/Dh/ phoneme pronunciation between the Pre- and Post-Test scores. The average increase in rank, or the mean, is 13. By contrast, the total number of positive rankings, or the Sum of Ranks, is 325. Ties are determined by the similarity of the phoneme ذ/Dh/'s Pre- and Post-Test scores. The Wilcoxon test table indicates a value of zero, indicating that the Pre- and Post-Tests do not have equal scores.

Tabel 1.
Wilcoxon Signed Ranks Test for phoneme ذ/Dh/

Ranks

		N	Mean Rank	Sum of Ranks
Post-Test Exp - Pre-Test Exp	Negative Ranks	0[a]	0,00	0,00
	Positive Ranks	25[b]	13,00	325,00
	Ties	0[c]		
	Total	25		

a. Post-Test Exp < Pre-Test Exp
b. Post-Test Exp > Pre-Test Exp
c. Post-Test Exp = Pre-Test Exp

Based on the output test statistics, the Wilcoxon test decision indicates that Asymp. Sig (2-tailed) is 0,000. The Asymp. Sig scores 0,000 < 0,05 indicate a difference between the pre-and post-test results when implementing the minimal pairs strategy. In other words, the strategy of minimal pairs affects student learning outcomes when students are trained to pronounce the ذ/Dh/ phoneme.

5.2. A2 = س/s/

The س/s/ is an Indonesian phoneme. As a result, Indonesian Arabic students have no difficulty pronouncing this phoneme in Arabic words. According to table 4, the average pre-test and post-test scores for pronouncing the phoneme س/s/ were five in both the experimental and control classes. A score of five indicates that students' ability to pronounce the phoneme س/s/ in Arabic is equivalent to native speakers (no foreign accent at all or definitely native). Therefore, when students pronounce this phoneme in Arabic, there is no Indonesian accent (foreign accent).

5.3. A3 = ص/S/

For the phoneme, ص/S/, the researcher found that the results of the data analysis showed that the experiment affected the improvement of the students' pronunciation level in this phoneme. Table 7 shows the average post-test score of the experimental class students is four, while the control class is 2,44. A score of four on the scale means a slight foreign accent. A score of 2,44 means that the student's ability to pronounce the phoneme ص/S/ in Arabic still has an Indonesian accent (foreign accent). In other words, the ability of experimental class students to pronounce the phoneme ص/S/ in Arabic almost no longer has an Indonesian accent (foreign accent), while the score of 2,44 lies

between a scale of two (strong foreign accent) and three (noticeable foreign accent).

Tabel 2. Wilcoxon Signed Ranks Test for phoneme ص/S/

		N	Mean Rank	Sum of Ranks
Post-Test A3 - Pre-Test A3	Negative Ranks	0[a]	0,00	0,00
	Positive Ranks	25[b]	13,00	325,00
	Ties	0[c]		
	Total	25		

a. Post-Test A3 < Pre-Test A3
b. Post-Test A3 > Pre-Test A3
c. Post-Test A3 = Pre-Test A3

Based on the output test statistics, the Wilcoxon test decision indicates that Asymp. Sig (2-tailed) is 0,000. Furthermore, the output indicates that the Asymp. Sig score is 0,000 < 0,05, indicating a difference between the pre-and post-test results when implementing the minimal pairs strategy. In other words, the strategy of minimal pairs affects student learning outcomes when students are trained to pronounce the ص/S/ phoneme.

5.4. A4 = ش/Sh/

According to Table 10, the average post-test score for students in the experimental class is 3,96, while the average for students in the control class is 2,60. On the scale, a foreign accent score of 3.96 falls between 3 (noticeable foreign accent) and 4 (slight foreign accent). Thus, 3,96 is almost identical to 4. This score of 3.96 indicates that students in the experimental class can pronounce the phoneme ش/Sh/ in Arabic without using an Indonesian accent. Meanwhile, the control class's average foreign accent score of 2.60 falls between levels 2 (strong foreign accent) and 3 (noticeable foreign accent). This score indicates that the phoneme ش/Sh/ has a strong Indonesian accent in Arabic students' control class.

The following table summarizes the Wilcoxon Signed Ranks Test results.

Tabel 3.

Wilcoxon Signed Ranks Test for phoneme ش/Sh/

		N	Mean Rank	Sum of Ranks
Post-Test Exp - Pre-Test Exp	Negative Ranks	0[a]	0,00	0,00
	Positive Ranks	25[b]	13,00	325,00

Ties	0[c]
Total	25

a. Post-Test Exp < Pre-Test Exp
b. Post-Test Exp > Pre-Test Exp
c. Post-Test Exp = Pre-Test Exp

Positive Ranks, or the difference in rank between the Pre- and Post-Test phonemes ش/Sh/. For N, Mean Rank, and Sum of Ranks, the negative difference between the Pre- and Post-Test phoneme ش/Sh/are zero. A score of zero indicates no change in the Pre-Test scores compared to the Post-Test scores. The table contains 25 positive data points (N), indicating that 25 students improved their mastery of the ش/Sh/ phoneme pronunciation between the Pre- and Post-Test scores. The average increase in rank, or the mean, is 13. Simultaneously, the total number of positive rankings, or the Sum of Ranks, is 325. Ties are defined as the similarity of the phoneme ش/Sh/'s Pre-test and Post-Test scores. The Wilcoxon test table indicates a value of zero, indicating that the Pre- and Post-Tests do not have an equal score.

Based on the output test statistics in the Tabel 12, the Wilcoxon test decision indicates that Asymp. Sig (2-tailed) is 0,000. The output indicates that the Asymp. Sig score is 0,000 < 0,05, indicating a difference between the pre-test and post-test results when implementing the minimal pairs strategy. In other words, the strategy of minimal pairs affects student learning outcomes when students are trained to pronounce the ش/Sh/ phoneme.

5.5. A5 = ظ/TH/

By and large, the descriptive statistics for these affirmative phonemes are very similar. According to Table 13, the average post-test score for experimental class students is 3,60, while the average for control class students is 2,20. According to the standard foreign accent scale, a score of 3,60 falls between three (noticeable foreign accent) and four (strong foreign accent) (slight foreign accent). This score of 3,60 indicates that students in the experimental class can pronounce the phoneme ظ/TH/ in Arabic, but the Indonesian accent is occasionally audible. Meanwhile, the average foreign accent score of 2,20 falls between levels 2 (strong foreign accent) and 3 (noticeable foreign accent). This score of 2,20 indicates that the phoneme ظ/TH/ is still pronounced with a strong Indonesian accent in the control class students' Arabic.

Furthermore, the following Table 14 shows the results of the Wilcoxon test. Negative Ranks or the negative difference between Pre-Test and Post-Test phoneme ظ/TH/ is zero for N, Mean Rank, and Sum of Ranks. A score of zero indicates no decrease in the Pre-Test Scores to the Post-Test scores. Positive

Ranks or the positive difference between the Pre-Test and Post-Test phonemes ظ/TH/. The table shows 25 positive data (N), which means that 25 students experienced an increase in their ظ/TH/ phoneme pronunciation mastery from the Pre-Test scores to the Post-Test scores. The mean Rank or the average increase is 13. At the same time, the number of positive rankings or Sum of Ranks is 325. Ties are the similarity between the Pre-Test and Post-Test values of the phoneme ظ/TH/. The Wilcoxon test table shows a score of zero, so it can be said that there is no equal score between the Pre-Test and Post-Test

Tabel 1. Wilcoxon Signed Ranks Test for phoneme ظ/TH/

		N	Mean Rank	Sum of Ranks
Post-Test Exp - Pre-Test Exp	Negative Ranks	0[a]	0	0,00
	Positive Ranks	25[b]	13	325,00
	Ties	0[c]		
	Total	25		

a. Post-Test Exp < Pre-Test Exp
b. Post-Test Exp > Pre-Test Exp
c. Post-Test Exp = Pre-Test Exp

Furthermore, based on Table 15 below, the Wilcoxon test decision indicates that Asymp Sig (2-tailed) is 0,000. Therefore, the output indicates that the Asymp Sig score is 0,000 < 0,05, indicating a difference between the pre-and post-test results when implementing the minimal pairs strategy. In other words, the strategy of minimal pairs affects student learning outcomes when students are trained to pronounce the ظ/TH/ phoneme.

5.6. A6 = ث/Th/

Student learning outcomes for this affirmative phoneme appear distinct from those for other phonemes. This result is demonstrated in Table 16 of the Wilcoxon test results. However, as illustrated in the following descriptive statistical table, there is no significant difference between this phoneme and other affirmative phonemes in the descriptive statistical table, particularly in the Mean column.

The average post-test score for the experimental class was 3,96, while it was 2,52 for the control class. A score of 3,96, which is almost identical to a 4 (slight foreign accent), on the foreign accent scale indicates that students can pronounce the phoneme ث/Th/ in Arabic without an Indonesian accent.

Meanwhile, a score of 2,52 indicates that students' Arabic pronunciation of the phoneme ث/Th/ retains an Indonesian accent.

The data on Positive Ranks and Ties is quite interesting in the Tabel 17 of the Wilcoxon test results. Both N, Mean Ranks, and Sum of Ranks are zero for Negative Ranks. The value zero indicates no change in the score between the pre-test and post-test results. Positive Ranks and Ties contain intriguing data in the following Wilcoxon test result. As seen on the positive Ranks, only 22 participants in the experimental class improved their score from pre- to post-test. On the other hand, three students in Ties did not see an increase in their pre-test and post-test achievement.

The researcher attempted to analyze raw data derived from pre-test and post-test results. Three students can pronounce the ث/Th/ phoneme in the pre-test and post-tests, resulting in 3. This result could be because the students were satisfied with their pronunciation achievement and received a 3, which is understandable by Arabic speakers.

According to the Wilcoxon test results for the ث/Th/ phoneme, the minimal pairs strategy improved the pre-test score to a higher score on the post-test. These findings suggest that the strategy of minimal pairs affects student learning outcomes when pronouncing the ث/Th/ phoneme.

Tabel 5.
Wilcoxon Signed Ranks Test for phoneme ث/Th/

		N	Mean Rank	Sum of Ranks
Post-Test Exp - Pre-Test Exp	Negative Ranks	0[a]	0,00	0,00
	Positive Ranks	22[b]	11,50	253,00
	Ties	3[c]		
	Total	25		

a. Post-Test Exp < Pre-Test Exp
b. Post-Test Exp > Pre-Test Exp
c. Post-Test Exp = Pre-Test Exp

Based on Table 18 of the output test statistics, the Wilcoxon test decision indicates that Asymp. Sig (2-tailed) is 0,000. The output indicates that the Asymp. Sig score is 0,000 < 0,05, indicating a difference between the pre- and post-test results when implementing the minimal pairs strategy. In other words, the strategy of minimal pairs affects student learning outcomes when students are trained to pronounce the ث/Th/ phoneme.

5.7. A7 = ز/Z/

The following descriptive statistical table compares phoneme ز/Z/ to other phoneme affirmatives, except for phonemes س/s/ and ث/Th/. The average score on the pre-test was 1,48 for the pre-test and 4,28 for the post-test in the experimental class. While in the control class, the average pre-test achievement was 1,56, the post-test achievement was 2,56.

A score of 4.28 falls between a 4 (slight foreign accent) and a five on the scale (No foreign accent at all or definitely native). The Indonesian accent (foreign accent) is eliminated when students pronounce this phoneme in Arabic. On the other hand, a score of 2.56 falls between a 2 (strong foreign accent) and a three on the scale (noticeable foreign accent).

To determine whether there is a difference in students' scores before and after the implementation of the minimal pairs strategy, the Wilcoxon test results in the following table indicate that 25 students saw a 13-point increase in their score indicated by the Mean Rank. Interestingly, none of the 25 students in the experimental class achieved the same score on the Ties line between the pre-test and post-test.

Thus, based on the results of the Wilcoxon test in the following table, the researcher can conclude that the minimal pairs strategy improves students' ability to pronounce the ز/Z/ phoneme.

Tabel 6.
Wilcoxon Signed Ranks Test for phoneme ز/Z/

		N	Mean Rank	Sum of Ranks
Post-Test Exp - Pre-Test Exp	Negative Ranks	0[a]	0,00	0,00
	Positive Ranks	25[b]	13,00	325,00
	Ties	0[c]		
	Total	25		

a. Post-Test Exp < Pre-Test Exp
b. Post-Test Exp > Pre-Test Exp
c. Post-Test Exp = Pre-Test Exp

Additionally, the following test statistics table summarizes the findings to determine whether there is a difference in results between the experimental and control groups. According to the Wilcoxon test decision, Asymp. Sig (2-tailed) is 0,000. This output indicates that the Asymp. Sig score is 0,000 < 0,05,

indicating a difference between the pre-test and post-test results when the minimal pairs strategy is used. In other words, when students are trained to pronounce the ز/Z/ phoneme, the strategy of minimal pairs affects their learning outcomes.

According to the description of each of the previous Africantive phonemes, the Positive Ranks in each table indicate an increase in the post-test score, except for the س/s/ phoneme. Similarly, it can be seen in the Test Statistics table that Asymp. Sig (2-tailed) is 0,000 < 0,05. This score indicates a difference in the attainment of scores between the experimental and control groups. Thus, the first research question addressed the minimal pairs strategy affecting students' ability to pronounce affirmative phonemes in Arabic.

Furthermore, the researcher wishes to address the second research question, which concerns the difference in scores between the experimental and control groups. The researcher used the Mann Whitney statistical test. According to the following table of Mann Whitney test results, there are differences in post-test scores between the experimental and control groups. The score demonstrates this conclusion where Asymp. Sig (2-tailed) 0,000 < 0,05.

Additionally, this study provides an answer to the third research question. The researcher used the N-Gain Score statistical test to address this question. The researcher concludes that because these affirmative phonemes are distinct, the N-Gain Score Test can be used to determine the efficacy of implementing minimal pairs of strategies in the experimental class.

The N-Gain Score test results in the following table indicate that the mean of the experimental class of N-Gain Percentage is 66,83. Based on the data analysis standards, it is known that the average N-Gain Score Percentage of 66,83 equals quite effective. In other words, implementing the minimal pairs strategy is quite effective in improving students' ability to pronounce affirmative phonemes in the experimental class.

On the other hand, the average N-Gain Score Percentage was only 21,94 in the control class. According to the data analyst's standard of effectiveness, the score of 21.9,4 is less than 40. This result indicates that the control class's learning method is ineffective.

Tabel 7.
Descriptive statistics of N-Gain Percentage

	Group			Statistic	Std. Error
NGain_Percentage	Experimental Class	Mean		66,8333	2,30971
		95% Confidence Interval for Mean	Lower Bound	62,2693	
			Upper Bound	71,3974	
		5% Trimmed Mean		68,7037	
		Median		66,6667	
		Variance		800,214	
		Std. Deviation		28,28806	
		Minimum		,00	
		Maximum		100,00	
		Range		100,00	
		Interquartile Range		50,00	
		Skewness		-,513	,198
		Kurtosis		-,388	,394
	Control Class	Mean		21,9444	1,90734
		95% Confidence Interval for Mean	Lower Bound	18,1755	
			Upper Bound	25,7134	
		5% Trimmed Mean		23,5802	
		Median		25,0000	
		Variance		545,690	
		Std. Deviation		23,36002	
		Minimum		-50,00	
		Maximum		50,00	
		Range		100,00	
		Interquartile Range		33,33	
		Skewness		-,803	,198
		Kurtosis		,668	,394

Conclusion

Based on the data gathered and statistically tested, the researcher concludes that the implementation of the minimal pairs strategy improves students' ability to pronounce affricative phonemes. The strategy is supported by the Wilcoxon test results, demonstrating a difference between the pre-test and post-test results. The Wilcoxon test results correlate with the Positive Ranks score in each Ranks table. Students in the experimental class reduced their foreign accents when pronouncing Arabic affricative phonemes.

The Mann-Whitney test demonstrates a difference in scores between the experimental and control groups. In other words, the minimal pairs strategy affects student learning outcomes in the experimental class, as seen in the post-test scores.

The results of the N-Gain Score test is 66,83. This score is at level 56 - 75 which means that the minimal pairs strategy is quite effective as a learning method to improve the ability of Indonesian learners of Arabic to improve their pronunciation.

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