

The Analysis of Students English Pronunciation In Term Of Stress Errors At Smp It Darul Ulum Pao Etang

^{1*}Riskiyanti A, ²Khadijah Maming, ³Sianna

Universitas Muhammadiyah Parepare

¹ arfinriskiyanti@gmail.com

² khadijahmaming@gmail.com

³ sayasianna@gmail.com

ABSTRACT

The purpose of the research is to describe out the students' English pronunciation in term of stress errors at SMP IT Darul Ulum Pao Etang. The researcher used descriptive qualitative research method. The researcher analysed the stress error in reading aloud. In this research, the researcher finds out the result of the research using descriptive qualitative research. It will describe the students' pronunciation in term of stress and errors.

The population of this research is the eighth grade of SMP IT Darul Ulum Pao Etang which consisting of one class, which consisted of 18 students and will be divided into one class. The subject of this researcher is the eighth grade of SMP IT Darul Ulum Pao Etang Academic years 2020/ 2021. The subject of the research is part of a population of individual information is obtain. The researcher takes 18 students

The aimed of the research it can be concluded that students at SMP IT Darul Ulum Pao Etang did some mistake in pronounce the words which included 2, 3, 4 dan 5 syllable. Besides that, the researcher found several caused of stress errors based on the students learning experience suh as unfamiliar word, homograph, lack of practice, mother tounge case and etc.

Keywords: Analysis, English Pronunciation, Stress Errors.

ABSTRAK

Tujuan penelitian ini adalah untuk menggambarkan kesalahan tekanan dalam pelafalan Bahasa Inggris siswa di SMP IT Darul Ulum Pao Etang. Peneliti menggunakan metode penelitian kualitatif deskriptif. Peneliti menganalisis kesalahan tekanan dalam membaca dengan keras. Dalam penelitian ini, peneliti menemukan hasil penelitian menggunakan metode penelitian kualitatif deskriptif. Ini akan menjelaskan pelafalan siswa dalam hal tekanan dan kesalahan.

Populasi penelitian ini adalah kelas delapan SMP IT Darul Ulum Pao Etang yang terdiri dari satu kelas, dengan 18 siswa yang akan dibagi menjadi satu kelas. Subjek penelitian ini adalah siswa kelas delapan SMP IT Darul Ulum Pao Etang tahun ajaran 2020/2021. Subjek penelitian ini merupakan bagian dari populasi informasi individu yang diperoleh. Peneliti mengambil 18 siswa.

Tujuan penelitian ini adalah untuk menyimpulkan bahwa siswa di SMP IT Darul Ulum Pao Etang melakukan beberapa kesalahan dalam melafalkan kata-kata yang terdiri dari 2, 3, 4, dan 5 suku kata. Selain itu, peneliti menemukan beberapa penyebab kesalahan tekanan berdasarkan pengalaman belajar siswa seperti kata yang tidak dikenal, homograf, kurang latihan, kasus bahasa ibu, dan sebagainya.

Kata Kunci: Analisis, Pelafalan Bahasa Inggris, Kesalahan Tekanan

Introduction

Language is used to create a meaningful communication among human beings. In other words, communication is the main function of language. Communication is impossible without shared knowledge and assumptions between speakers and hearers. People conduct communication using a language or language is used to create a meaningful communication among human beings. In other words, communication is the main function. English is one of languages used as a means of communication among the learning activity.

Today, students learn English at school, they could learn the four skills namely, listening, speaking, reading and writing. All of these skills must be practiced by students and cannot be separated from one to another if one expects to be able to communicate freely in English. However, it cannot be denied that English is still a crucial problem for Indonesian students. As a matter of fact, until today most students from junior high school up to university level have difficulties in all of these skills. Many researches have indicated

that with hearing in the classroom, and most of the time, by hearing students can know the variation of language skill in the English lesson. However, by hearing, even as used by the teacher, hardly ever functions as a means for the students to gain knowledge and explore ideas. Listening is considered as the most difficult lesson in English subject, because usually the students get difficulties to distinguish clearly what foreigners say on the recording of listening that given by the teacher in the classroom. In junior high school students have to study English, and the content in English book talk about discussion. Most of students are lazy to listen clearly so that they can not to distinguish between the correct and incorrect pronunciation on foreigners recording played by the teacher in the classroom in English pronunciation, each vowel letter can be pronounced with different sound. There are only five vowel letters, but there are many more vowel sound. The most common pronunciation are the *long vowels* and the *short vowels*.

Based on the interview with English teacher of eight grades of SMP IT Darul Ulum Pao Etang got the most difficult material which is taught to the students is about pronunciation. The students have low ability to differentiate/distinguish homophone words. It makes the misunderstanding in dialogue practice. Therefore, this research is important to be done. The teacher also explained that their students had some problems for example the word is used as a noun if the stress is placed on the first syllable while it is a verb when the stress is placed on the second syllable. As an illustration, to determine the placement of stress in the word 'present', we have to take into account at least four factors. From the identification above, the focus of this research is to find out what students' pronunciation in term of stress and errors in learning pronunciation. This decision was taken because there were gaps found in the school, and there was some research supporting the gap.

First, the grammatical class of the word, whether it is a noun, a verb, an adjective or an adverb or broadly categorized as a content word. In general, content words are stressed because they carry information while function words are generally not stressed. Secondly, the morphological form of the word. Words can be categorized as simple or complex as a result of either containing one or more affixes, thus affecting the stress placement. Third, the phonological structure of the syllables. Syllables that contain a schwa /ə/ and short vowels are usually unstressed. Finally, the number of syllables also determines the stress placement. Two, three or four syllable words require different treatment in placing stress. Therefore, what Roach describes as simple word stress rules are actually not

simple at all. It is the complexity of stress rules that makes it difficult for learners of different language backgrounds to assign the correct placement of word stress.

Method

The researcher used descriptive qualitative research method. According to Bodgan and Taylor (Moleong,2010), qualitative research was research that produced descriptive data in the form of words or oral from people and observed behavior. in this connection, the researcher will analyze the stress error in reading aloud. In this research, the researcher finds out the result of the research used descriptive qualitative research. It was described the students' pronunciation in term of stress and errors.

Population is a set (collection) of all elements processing one or more attributes of interest (Suharsimi:2006). Population is the generalization area which consisted of object and subject that has the quantity and particular characteristics settled by the researcher. The population of this research was the eighth grade of SMP IT Darul Ulum Pao Etang which consisting of one class. It was consisted of 18 students and divided into one class.

The subject of this researcher was the eighth grade of SMP IT Darul Ulum Pao Etang Academic years 2020/ 2021. The subject of the research was part of a population of individual information is obtain. The researcher took 18 students.

According to Wiyanto and Sugiyono (2018: 55) a research instrument was a tool used to measure observed natural and social phenomena. The goal is to collect data or information that is useful to answer research problems. In this study, the researcher will use field notes to record English learning activities and as a supporting instrument in conducting research. Then field notes are presented in tabular form.

Describe several stages or techniques in analyzed data as follows (Miles, Huberman, 1984) cited by Wiyanto and Sugiyono (2017: 55): In qualitative data collection, the researcher used various techniques and carried them out repeatedly to obtain very large and complex data. Because the data obtained in the field are still very complex, still rough, and not systematic, the researcher needs to analyze by reducing the data. Data reduction means making a summary, choosing a theme, making certain categories, and patterns so that it has meaning. Data reduction is a form of analysis to sharpen, select, focus, discard, and organize data in the direction of making conclusions. Data will be selected and reduced so that only relevant data is used. Qualitative data obtained from the field is the result of

interviews with all informants and the results are explained in the presentation data in chapter 4 for further analysis.

Data display is the process of presenting data after data reduction. The presentation of data in qualitative research is carried out in the form of summaries, charts, relationships between categories, patterns, and others so that it is easily understood by the reader. Data that has been arranged systematically then to be display to make it easier for readers to understand the concepts, categories, and relationships, and differences of each pattern or category.

The third step in the interactive model is decision making and verification. In qualitative research, the initial conclusions drawn are still temporary, so they can change at any time if not supported by strong evidence. But if the conclusions that have been drawn are supported by valid or consistent evidence, then the conclusions drawn are flexible. In addition to providing answers to problem formulation, conclusions must also produce new findings in the field of science that did not yet exist. These findings can be in the form of a description of an object or phenomenon that was previously still vague after examination becomes clearer, it can also be a hypothesis and even a new theory.

Results and Discussion

The researcher described the analysis through data collected in research field. Data collection was carried out by conducting reading English conversation test and interviews with the research participants was the eighth grade of SMP IT Darul Ulum Pao Etang. All result data was carried out of the students' pronunciation in term of stress and errors.

A. Research Findings

As the researcher explained in the previous chapter, there was two kinds of instrument that the researcher used in collecting the data. The researcher used to read English conversation test and interviews that focus on pronunciation in term of stress and errors conducted by students of the eighth grade of SMP IT Darul Ulum Pao Etang. First instrument was reading English conversation test.

1. Students Stress Errors

Based on the test, the researcher found that there was some misplaced stressing made by the students especially in word stress. The misplaced stressing happened to the two-syllable, three-syllable, four-syllable and five-syllable. The misplaced stress made by

The Analysis Of Students English Pronunciation In Term Of Stress Errors At Smp It Darul Ulum Pao Etang

the students were quite similar. Few students even misplaced same word stress. The words stress that misplaced were even the simple words. Based on the data display in table 1, 2, 3, 4, 5. It was found that few words stress was commonly misplaced by each student.

Here are the sample of students' errors based on the syllable:

Students' Errors	Correct
'Be-cause	Bi'kaz
Ve-'ry	'Ve-ry
As-'pect	'As-pect
'Se-cure	Se-'cure
'To-wards	To-'wards
Af-'ter	Af-'ter
Stu-'dying	'Stu-dying
Di-'gree	'Di-gree
Fin-'ding	Fin-ding
Be-'tter	'Be-tter
Fu-'ture	'Fu-ture
Ha-'ving	/'Ha-ving/

Table 1. Two Syllables

Students' Errors	Correct
'Con-ti-nue	Con-'ti-nue
'Im-por-tant	'Im-por-tant
Gra-'du-ate	Gra-'du-ate
'Gra-du-ate	'Gra-du-ate
A-'ny-way	A-'ny-way
'Con-si-dered	Con-'si-dered
Com-'pa-nies	'Com-pa-nies
'O-pi-nion	O-'pi-nion
'Al-rea-dy	Al-'rea-dy

Table 2. Three Syllables

Students' Errors	Correct
Di-ffi-'cul-ty	'Di-ffi-cul-ty
'E-du-ca-tion	E-du-'ca-tion
Un-for-'tu-nate	Un-'for-tu-nate

Table 3. Four syllables

Students' Errors	Correct
O-'ppor-tu-ni-ties	O-ppor-'tu-ni-ties

Table 4. Five syllables

2. Causes of the Students Stress Errors

To know the students stress from their experience problem, the researcher did the interview to the students which aimed to answer the problem formulation in chapter I, namely to find out the students' problem in reading English conversation. The researcher gives simple questions to find out the students' of student problem in reading English conversation.

In the interview this time it was a little different because the researcher interviewed students. This is because the situation and conditions are in new normal and must maintain a distance, where some students are not in the location (Makassar) but stay in their hometown. Therefore, it is not possible for researcher to conduct direct interviews with students. For further information, the researcher explains the results of the interview in the form of the discussion below. Then, the researcher found some problems faced by the students in terms of their stress errors such as follow:

a. Unfamiliar Word:

Unfamiliar word means the word that difficult to pronounce and difficulty to learn. Potentially difficult word is the words that contain sounds that are unfamiliar.

Researcher: Are there any difficulties that you encounter when you read English conversations with the correct stressing (word stress) technique according to the native speakers? If yes, what is the cause?

(Students 1)

"Yes, sometimes in word stress, for example, it has the same word but a different meaning". (Interview on July 11th 2023)

(Students 3)

So if there is a word that is difficult for me to pronounce, the first, I learn how to pronounce it well, then I will pay attention to which part is stressed." (Interview on July 11th 2023)

(Students 5)

"Thank you for the question, yes exactly, I usually made a mistake when I read some text in English, I can not pronounce all the words and sentences perfectly because sometimes I found some new words that I do not know the meaning and the

pronunciation, so I have to more practice for the better pronunciation” (Interview on July 11th 2023)

(Students 9)

“Yes, the reason is because there are usually unfamiliar words in the conversation/dialogue, so the errors of the words spoken is just casual without knowing whether it's true or not”. (Interview on July 11th 2023)

b. Homograph:

A homograph is defined as a word that is spelt like another word but has a different meaning from it, and may have a different pronunciation.

(Students 2)

“Yeah, for example, there is a new word that I am not used to when I pronounce it, so it's difficult to pronounce it as long as it's said without any emphasis there. (Interview on July 11th 2023)

c. Lack of Vocabulary

The lack of vocabulary is the word that rare produced by the students’ in learning and daily activities.

(Students 4)

“Sometimes I have difficulty with the technique of emphasizing words according to the speaker when reading conversations because I sometimes have difficulty in the vocabulary”. (Interview on July 11th 2023)

The answers by some students above the researcher can conclude that there are still some students who have difficulty in reading English conversation with correct errors and stressing, but there are also some students who do not have difficulty in reading English conversation with correct errors and stressing.

d. Lack of Practice

Teaching vocabulary should be able to made the students more actively to pronounce the english words. When the students learn some words, they need to know

what a word sounds like. By repeat the word and made a little practice by utterance the word, it will made pronoun the words correctly.

Researcher: Are there any difficulties that you encounter when you read English conversations with the correct errors? If yes, what is the cause?

(Students 7)

"Not too often, sis and if so, it's because maybe you don't read and listen to the conversation in English, sis." (Interview on July 11th 2023)

(Students 8)

"Yes, because of that, Sis, I lacked practice and learned what words need to be suppressed so that the errors is correct". (Interview on July 11th 2023)

In this point, the researcher concluded that sixth semester students majoring in English Department are sometimes still have the problems about English, because their habit in learning English is still lacking. So, they still did errors in English, especially about pronunciation.

e. Mother Tounge Case

Mother Tounge Case is some possible problems faced by the students in learning pronunciation. Sometime it becomes a troublesome for the students who want to practice by utterance some words. When they try to speak up or practice, their friends do not give good respond. They still tend to use their mother tongue than using English.

Researcher: Are there any difficulties that you encounter when you read an English conversation with the correct word stress technique according to the native speaker? If yes, what is the cause?

(Students 10)

"Thank you for the question, For this question I think we know that we cannot pronouncing all the words bases on the native speaker 100 percent correct because we had different mother tounge and we realized that even though we cannot do like native speaker in reading text, we still do the best to pronounce some words as correct as possible". (Interview on July 11th 2023)

(Students 11)

"In reading English conversation with the word emphasis technique according to the native speaker, it is a little difficult because where usually our pronunciation is different from what we hear, so we have to know more about what is being said and listen more clearly". (Interview on July 11th 2023)

In the third point about the answers by the students, the researcher also agrees with this, because it is indeed a challenge for those of us whose mother tongue is not English, besides our language is Indonesian, we also have a regional language which will certainly be one of the it is difficult for us to learn English because of the difference in the mother tongue. However, this will not be an obstacle if we continue to practice. In fact, many Indonesians are fluent in English.

f. Lack of Understanding about word Stress

Understanding word stress is important in mastering the rhythm of English. If the students put the stress in the wrong syllable or give equal stress to each syllable, the listeners might not understand what they are saying.

Researcher: Are there any difficulties you encounter when you read English conversations with the correct word stress technique according to native speakers? If yes, what is the cause?

(Students 12)

"Yes, Sis, there is a difficulty when reading a conversation that has emphasis on words and we don't use that emphasis technique and it's not right when the conversation will make the conversation difficult to understand". "The reason is because of a lack of understanding in the emphasis of words" (Interview on July 11th 2023)

Researcher: Are there any difficulties that you encounter when you read English conversations with the correct errors? If yes, what is the cause?

(Students 13)

"In terms of errors, sometimes I don't know which one should be read rising and which one should be read falling". (Interview on July 11th 2023)

In the last point, based on the answer by the students the researcher sum up that there are still some sixth semester students in the the eighth grade of SMP IT Darul Ulum Pao Etang who lack understanding in terms of pronunciation, especially about correct errors and stressing techniques in English. infinitives". This is one of the reasons why third semester students make several errors in the use of the infinitive.

B. Discussion

1. Students Stress Errors

At this stage it is the result of research on analysing students' pronunciation errors in reading English conversation at the sixth semester students of English Department. As the researcher describe in findings two kinds pronunciation errors when the students reading English conversation, there were stressing error and errors error. Rinjani (2014) on her research found that there were some misplaced stresses made by the students. The misplaced stress happened to the two-syllable words, three-syllable words, and four-syllable words. The misplaced word stress made by the students were quite similar. Few students even misplaced same word stress. The words stress that misplaced were even the simple words.

The research conducted by Dewi (2017) focused to find out the word stress error and compared the students' word stress productions to the transcription in the dictionary. The research conducted by T.P. Himadri & Vidushi Sharma (2018) focused to find out the stress in English pronunciation by the English as second language learners. The result of this research, show that more than 86% students read monosyllabic words with proper stress about 84% students read the two syllable words with proper stress an average of 72% students read three syllable words with proper stress and the number of students who read the polysyllable words were least. Only 67% of students from the sample were able to read the given sentences with proper stress.

The researcher does not only want to know the most dominant stress errors, but also the researcher focusses on causes of those stress errors. So, the researcher believes that it is different from her research. She concerns on the students' errors in pronouncing English vowels. By analyzing vowels errors, the researcher believes that it can give many advantages for learners to be aware of some letter that can make them misunderstanding with another speaker.

The misplaced stress that the researcher found were on the two syllables word, such as; (*Be-cause, Ve-ry, As-pect, Se-cure, To-wards, Af-ter, Stu-dying, Di-gree, Fin-ding, Be-tter, Fu-ture, Ha-ving, Hi-gher, E-ven, O-btain, A-gree, Bo-ther, No-thing, Ear-lier, Be-lieve, Un-til, Co-llege, Wi-thout, and Back-ground*), the three syllables words such as; (*Con-ti-nue, Im-por-tant, Gra-du-ate, A-ny-way, Con-si-dered, Com-pa-nies, O-pi-nion, Al-rea-dy, Ex-pe-rience and Ins-ti-tu-tions*), the four syllables words such as; (*Di-ffi-cul-ty, E-du-ca-tion, and Un-for-tu-nate*) and five syllables such as; (*O-ppor-tu-ni-ties*).

The finding shows that the students still made some errors in errors. The students made errors in falling errors and rising errors. The falling errors errors made by students such as; (1) [*Best of luck.*], (2) [*I considered that education is very important aspect to me.*], (3) [*What opportunities are they?*], (4) [*Why bother going back to school?*], (5) [*We still have to get a job.*], (6) [*you are right.*]. The rising errors errors made by students, such as; (1) [*By the way.*], [*Are yo[u sure aboutt that?*], (3) [*It is very unfortunate.*], (4) [*but as I said earlier.*], (5) [*I get your points.*], (6) [*if we can get a job after we graduate.*], (7) [*But every person has different opinion towards this matter.*] (8) [*Because.*].

2. Problems Causes the Students Stress Errors

Meanwhile, to find out the problems of students' pronunciation errors in reading English conversation is through interviews. Interview can be simply described as a form consultation or communication where the researcher tries to find out more about problems as said by students. The researcher found that the most misplaced stress in this research were in two- syllable words which displayed on the data display in findings session. The two- syllable words which the stress misplaced mostly stressed on the first syllable. It was going with the previous research which both researches found the most misplaced word stress were in the two-syllable words that made both of the researches got a similar finding.

The researcher found that the students mention a word with Indonesian accent, for instance; success. The word "*Because*" mentioned "*Be-cause*" in English pronunciation which is stressed on the second syllable whereas the students placed the stress on the first syllable (*Be-cause*) which more sounds like Indonesian accent. Based on the students' work, the Indonesian accent caused some word stress misplaced.

The researcher found that there were so many problems of interference faced by the students at the eighth grade of SMP IT Darul Ulum Pao Etang when reading English conversation. Because in the case of mother tongue, they have many difficulties because

they lack of pronunciation practice in their daily activity, so they found many unfamiliar words.

Conclusion

The aimed of the research it can be concluded that students at SMP IT Darul Ulum Pao Etang did some mistake in pronounce the words which included 2, 3, 4 dan 5 syllable. Based on the findings and the discussion above, the researcher concluded that the students of SMP IT Darul Ulum Pao Etang still face problem about the pronunciation especially the stress errors. The students' misplaced stress is quite similar. The words most misplaced stress made by the students are the two-syllable words. It was also found that the Indonesian accent was causing the students misplaced the word stress. The students face the difficulty to place the stress correctly even though they had been trained well as good speakers and instructors. Besides that, the researcher found several caused of stress errors based on the students learning experience such as unfamiliar word, homograph, lack of practice, mother tongue case and etc.

Bibliographies

- Anugrah, Agung Teguh 2019. *Improving The Students' Pronunciation Through The Use Of Text-To-Speech Software (A Pre-Experimental Research at the Tenth Grade Students of SMAN 8 Makassar). A Thesis*. English Education Department Faculty Of Teacher And Training Education Muhammadiyah University Of Makassar. *Published*
- Arikounto, Suharsimi. 2006. *Prosedur Penelitian*. Jakarta: Asdi Mahastya,
- Avery, Peter and Ehrlich, Susan. 2008. *Teaching American English Pronunciation*. New York: Oxford University Press.
- Dewi, Novi, and Ayusari. 2017. *Common Mistake in English*. Yogyakarta: Brilliant Books,
- Gilakjani, Abbas. Pourhosein, Sabouri. Narjes, Banou. 2016. *The Significance of*
- Jo McDONOUGH and CHRISTOPER SHAW. 2003. *Materials and Method in ELT*, Second Edition, Berlin, German,

- Kurniawan, Arif. 2007. *Belajar Bahasa Inggris Melalui Permainan*. Jakarta Timur: CV Visindo Media Persada.
- Listening Comprehension in English Language Teaching. *Theory and Practice in Language Studies*, Vol. 6, No. 8. Iran: Islamic Azad University.1670-1677.
Accessed on Web Accessed on June 15, 2023.. Pdf.
www.academypublication.com/ojs/index.php/tpls/.../852
- Modesti, Susanna. *A Study on Teaching English Pronunciation in Primary School in Italy*. Univetsita Ca'fascaru ,Venezia.
- Nasution** Eriska Oktaviani, Nelda and Srimaharani Tanjung. 2019. *An Analysis Of Students' Error In Pronunciation Practice (a Study At The Fifth Semester Of English Department Institut Pendidikan Tapanuli Selatan 2018/2019 Academic Year)*. Skripsi. Pendidikan Tapanuli Selatan. Published.
- Novitadewi, Ninda. 2017. *Stress errors in polysyllabic adjective words by the 6th semester students of English Letters Department in Sanata Dharma University*. Skripsi thesis, Sanata Dharma University.
- Reskia. 2021. *English Intonation In Reading Aloud Produced By The Students Of English Education Department At Unismuh Makassar (a Descriptive Research)*. A Thesis. English Education Department Faculty Of Teacher And Training Education Muhammadiyah University Of Makassar Published.
- Rinjani, Dita. P.A. 2014. Error Analysis on Word Stress of 3rd Semester Students of English Study Program of Faculty of Cultural Studies. English Study Program. Faculty of Cultural Studies, Universitas Brawijaya. Journal. Published. Accessed on 26th February 2023.
- Rust, Ronald. *Research in Marketing*. Vol 34: 286- 301.
- Salim, and Syahrums. *Metodologi Penelitian Kuantitatif*. Bandung :Cita Pustaka Media, 2016.
- Sari Tanjung, Mulia. 2016. *The effect of Mimicry Memorization Method and the Students' Ability in Mastering Pronunciation at MTS Azidin Medan*. Faculty of Tarbiyah and Teacher Training, UIN SU, Medan.
- Saricoban, Arif. *Language and Linguistic Studies*. Vol 6. ISSN:1305-578X.

Siswoyo. 2016. Students' Error In Using Simple Present Tense Mastery. *Jurnal Tadris Bahasa Inggris*. Lampung. Vol.9. Tahun 2016 (No 2); 468.

Sugiyono. 2010. *Metode Penelitian Kuantitatif dan R&D*, Bandung : Alfabeta.

Sukardi, Weda. 2018. Stress Shifts Of English Utterances Made By Indonesian Speakers Of English (Ise). *International Journal of English Linguistics*; Vol. 2, No. 4; 2018. Published by Canadian Center of Science and Education. Faculty of Language and Literature, State University of Makassar, Indonesia.

The International Phonetic Alphabet (IPA) Revised to 2020 (International Phonetic Association, 2020)

Wiyanto, T., Samani, M., & Sugiyono, S. 2017. *The developing teaching practice model as an effort to improve the quality of mechanical engineering vocational school teachers*. *Jurnal Pendidikan Vokasi*, 7(3), 349–363. <https://doi.org/10.21831/jpv.v7i3.17923>

Yurisaldi, Arman. 2010. *Metode Aktifitas Otak*. Yogyakarta : Pustaka Widayatama.