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Morphological analysis strategy used to enhance the student's vocabulary acquisition and reading comprehension

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Abstract

This study aims to investigate the use of morphological analysis strategy in enhancing the student's vocabulary acquisition and reading comprehension. The research was experimented in the English Department at Universitas Muhammadiyah Parepare, with a total sample of 28 students. This study was pre-experiment research with a pretest-posttest design. The result of this study indicated that: (1) in teaching vocabulary through vocabulary analysis strategy, there are significant differences between the mean score of the pre-test (58.57) and the mean score of the post-test (84.28). Besides that, the result of the t-test calculation shows that the t-test value (7.75) is higher than the t-table value (2.052) at a significance level 0.05 from $df = 27$. (2) In teaching reading comprehension through vocabulary analysis strategy, there are also significant differences between the mean score of the pre-test (54.64) and the mean score of the post-test (80.51). In addition, the result of the t-test calculation shows that the t-test value (9.75) is higher than the t-table value (2.052) at the significance level 0.05 from $df = 27$. Thus, the student's vocabulary acquisition and reading comprehension significantly improve after they are taught using the morphological analysis strategy.

Key words: morphological analysis strategy, teaching reading, vocabulary

Introduction

Since building vocabulary is included as one of the objectives in teaching reading comprehension in the English department of Universitas Muhammadiyah Parepare, where the reading curriculum arranged targets the student's vocabulary acquisition for each level of reading comprehension subjects, namely 1500 new words for reading comprehension 1, 3000 new words for reading comprehension 2, and 4500 new words for reading comprehension 4. Ediger (1999) stated that developing a rich vocabulary in the four skills of language is important in all curricular areas, especially in the reading curriculum. This, of course, is not easy work to be done by a teacher.

The student's engagement and motivation are essential elements that the teacher must build, so the teacher needs to consider the appropriate strategy and media or method used to improve the student's vocabulary acquisition. The strategy or media chosen, of course, must be able to encourage the student's interest and motivation in learning vocabulary, referred to as reading comprehension. Thus, this means that the student's ability to comprehend a reading text is determined by the student's vocabulary knowledge or size.

Several studies have shown that the vocabulary size of English Language learners (ELLs) is a strong predictor for success in speaking, reading, listening and writing English. A research result concluded by Kirby and Bower (2012) that vocabulary knowledge is an important aspect of cognitive development. It contributes to success in word reading and reading comprehension and thus has implications for learning in all subjects. The analysis results of scientific studies conclude that readers' vocabulary is strongly related to their understanding of the text (The National Reading Panel (NRP); National Institute Health and Human Development, 2000).

The NRP enlightened that the student has greater comprehension than students who do not receive vocabulary instruction when students are taught keywords before reading text. However, it is important to realize that morphology instruction taught in the second semester in Universitas Muhammadiyah Parepare aims to provide the student ability or understanding to analyze the internal structure of words and the process of how the words are formed and how many words can be produced. For example, word use can be added with various morphemes such as user, useful, usefully, and usefulness. All of them have a different meaning. Therefore, the student's understanding gained from this subject should be able to be referred to vocabulary acquisition and reading comprehension. According to Kiefer, Micheal J., and Lesaux, Nonie K. (2007), in language and reading, morphology refers to the study of the structure of words, particularly the smallest units of meaning. When the writer teaches morphology to the students, one thing which encourages the writer to investigate the effect of morphology instruction on teaching vocabulary, writing, listening and reading comprehension, then, this way is known as the morphological analysis strategy. This strategy is used to improve the student's vocabulary and reading comprehension ability.

a. The Knowledge of Morphology and Morpheme

Morphology is the scientific study of linguistics providing and understanding the processes of how words are created and how many words are produced or formed. According to Booij Geert (2005), morphology is the study of the internal structure of words, which deals with forms of lexemes (inflection) and with how lexemes are formed (word formation). New words are made based on patterns of form-meaning correspondence between existing words. McCarthy, Andrew Carstairs (2002) stated that grammar is concerned with the structure of words and relationships between words involving the morphemes that compose them technically. Kirby and Bowers (2012) stated that morphology is an important component of word knowledge, describing how words are composed of meaningful parts.

Meanwhile, the minimal linguistic unit with a lexical or grammatical meaning is called a morpheme (Booij Geert, 2005). Plag Indo (2002) defined morpheme as the smallest meaningful units of words. Kirby and Bowers (2012) explained that a morpheme is the smallest meaningful unit of language, and some words consist of only one morpheme (e.g., *sign, design, resign, signature* and designation).

b. Morphological Analysis Strategy

In English, a new word can be formed by adding a prefix or a suffix to a base word. This word-forming process, in linguistics, is called the *morphological* process. According to Graves (2004), learners need to learn strategies to unlock word meaning to develop the needed vocabulary knowledge. Bellomo (2009) defined morphological, structural or analysis as the process of breaking down morphologically complex words into their constituent morphemes (word meaning parts). In addition, he stated that building a vocabulary strategy program based on morphological analysis that includes word parts that are stable in form and transparent in meaning and ideally, selected morpheme should transfer to multiple words that will allow the student to obtain much mileage from this strategy.

The understanding that English words can be divided into different kinds of morphemes such as roots, base, stem and affixes (*prefix and suffix*) based on our

teaching that the ability to analyze the internal structure of words can become a strategy in teaching vocabulary called *morphological analysis strategy*. Mohammed Fallata (2012) expressed one of the seven best strategies offered by the researchers, which the teacher can use to improve the student’s vocabulary by analyzing the new vocabulary’s structure, including affixes, inflections, compounds, words, and contractions to define their meanings. Kirby and Bowers (2012) illustrate the process of analyzing the morphological structure of words by taking example word *designation*. The word *designation* is composed of four morphemes, as shown below:



c. Vocabulary Instruction through Morphological Analysis Strategy

Vocabulary instruction using morphological analysis strategy was designed to give the learners understanding of morphemes, including derivational and inflectional morphemes, to improve their vocabulary treasures. The learners learn to analyze the internal structure of words and to use context clues to find the meaning, as described by Kirby and Bowers (2009) and Baumann et al.(2002) that vocabulary growth is the breadth of knowledge (how many words the learners know?) and depth of knowledge (how well the learners know the words that they do know?)

Graves (2006) proposed that a comprehensive vocabulary program would include activities to serve several functions, namely (1) to provide students with rich and varied language experience”, (2) to teach a relatively small number of well-selected individual words directly, (3) to teach word learning strategies, including morphology, dictionary skills, and the use of context clues, and (4) to foster “word consciousness, “that is, students’ awareness of and interest alongside other strategies for word learning. While Carlo et al. in Kieffer, Michel J, and Lesaux, Nonie K. (2007) suggested three principles that underline an effective vocabulary program for these learners, including (1) new words should be taught in meaningful contexts, (2) words should be encountered in a variety of contexts, (3) word knowledge involves depth of meaning as well as spelling, pronunciation, morphology, and syntax.

Along with the rapid development of ICT, many programs can be found on the internet to help the teacher teach vocabulary to create an interesting learning atmosphere. By using NLP service, a free English Morphological Parsing service which can help the student to generate a word according to its morphological properties, as shown below:

NLP Online Services NLP Service, NLP Code in C#, Introduction to Linguistics

Free English Morphological Parsing Service An English Morphological Parser

Put your word here, e.g. internationalization

misunderstanding (0: Word)
 - misunderstanding (1: Stem)
 - -mis (2: Prefix)
 - -understand (2: Root)
 - -ing (1: Inflection)

Morphologically related words:
 understanding
 understandable
 understandings

Terminology

- Inflection:** *inactivities*
Used to mainly satisfy grammatical requirement.
- Suffix:** *inactive, inactivity*
Used to derive a new word of different part of speech
- Prefix:** *inactive*
Used to derive a new word, usually of the same part of speech
- Stem:** *inactivities, inactivity, inactive*
The part with the inflection, or: prefix, or a suffix removed.
- Root:** *inactivities*
The minimal part of a word that carries its core meaning, it may or may not stand by itself

In English, a new word can be formed by adding a prefix or a suffix to a base word. An example is:
 1. *act* + *ne* = *active*
 2. *in* + *active* = *inactive*
 3. *inactive* + *ty* = *inactivity*
 4. *inactivity* + *es* = *inactivities*.

Step 4 is inflectional. This word forming process, in linguistics, is called morphological process, which took place at certain order in a word's history. For example, the following order is not legal, as prefix *in* in the sense of *not, opposite*, cannot be added to a noun.
 1. *act* + *ne* = *active*
 2. *active* + *ty* = *activity*
 3. *in* + *activity* = *inactivity* ?
 4. *inactivity* + *es* = *inactivities*.

This parser captures and displays the morphological process of any English word, even a word coined by you playfully, provided it is not a compound word.

[Home > Free NLP Online Services > Morphological parsing](#)

d. Teaching Vocabulary with Morphological Analysis Strategy to Improve Reading Comprehension

According to Hickey, Pamela J., and Lewis T. (2013, the ability to analyze word parts when reading may support the ability to correctly pronounce an unknown word, to understand the meaning of an unknown word, or to do. Kiefer, Micheal J., and Lesaux, Nonie K. (2007) found that students with a greater understanding of morphology also have higher reading comprehension scores when holding constant their word reading fluency. They added that understanding morphology may help students broaden their vocabularies, and vocabulary growth may improve students' understanding of morphology. Therefore, According to Stanovich in Kiefer, Micheal J. and Lesaux, Nonie K. (2007) that, vocabulary and reading comprehension have a reprisal relationship – as greater vocabulary leads to greater comprehension, better comprehension also leads to learning more vocabulary words – and this relationship has major implications for the teaching of reading (Rupley, Logan, & Nichols in Kiefer, Micheal J., and Lesaux, Nonie K., 2007). Thus, vocabulary instruction can directly increase the student's comprehension of the content of reading text.

Research Design

This study is a pre-experimental research with pre-test and post-test design consisting of two phases, namely (1) Vocabulary development with Morphological analysis strategy and (2) teaching vocabulary through morphological analysis strategy to improve the student's reading comprehension. Participants were students of the English Department at Universitas Muhammadiyah Parepare. The total sample used was 28 students. The instrument used in this research was a reading and vocabulary size test that was developed by Nation and Beglar (2007) as well as Schmitt, N. (2010). The original version of the vocabulary test is a multiple-option format. There are 3-word levels in total; each level consists of 10 words; the total amount of items on the test is 30. Meanwhile, the Reading test consisted of three types of tests, namely 10 items multiple choice, 10 items true/false reading test, and 10 completion items.

Findings

a. Results 1: Teaching Vocabulary through Morphological Analysis Strategy

The obtained results of the pre-test showed that none of the students was in very good classification, 8 (28.58%) students were in good classification, 3 (10.71%) students were in fair classification, 10 (35.71%) students were in poor classification, and 7 (25%) students were in very poor classification. The mean score of the student was 58.57. Meanwhile, the obtained data from the post-test showed that of the 28 students, there were 14 (50%) students were in very good classification, 9 (32.14%) students were in good classification, 4 (14.28%) students were in fair classification, 1 (3.58%) student was in poor classification, and none of the students were in very poor classification. The mean score of the student was 84.28.

Based on the previous data, we can see that the students' achievement was in poor classification before teaching the English vocabulary through morphological analysis strategy. While after giving treatment, the student's achievement is good classification. It means there was a significant difference between before and after the student were taught vocabulary through morphological analysis strategy in the second semester in the English Department at Universitas Muhammadiyah Parepare.

In hypothesis testing, the researcher used the t-test formula. The level of significance is set at $\alpha = 0.05$

The level of significance at the t-test and t-table

N	Level of Significance	t-test value	t-table value
28	0.05	7.75	2.052

The table above shows that the t-test value (7.75) was higher than the t-table (2.052). From the analysis, the null hypothesis was rejected, and the alternative hypothesis was accepted. It means there was a significant difference between the student's pre-test and post-test scores. Thus, it can be concluded that the student's vocabulary acquisition can significantly improve after they are taught vocabulary through a morphological analysis strategy.

Results 2: Teaching Reading Comprehension Through Morphological Analysis Strategy

The reading test result obtained in the pre-test showed that most of the student's scores were in fairly good classification. Of 28 students, there were 2 (7.14%) were in good classification, 10 (35.71%) were in fair classification, 8 (28.57%) were in poor classification, and 8 (28.57%) were in very poor classification. The student's mean score was 54.64. The post-test result indicated that most of the students were in good classification. Of 28 students, there were 6 (21.42%) were in very good classification, 16 (57.14%) were in good classification, 6 (21.42%) were in fair classification, and none of the students got in poor and very classification. The student's mean score was 80.51. These results indicate the significant difference between before and after the student was taught reading comprehension through morphological analysis strategy.

In hypothesis testing, the researcher used the t-test formula. The level of significance is set at $\alpha = 0.05$

N	Level of Significance	t-test value	t-table value
28	0.05	9.242	2.052

The level of significance at the t-test and t-table

The table above shows that the t-test value (9.242) was higher than the t-table (2.052). From the analysis, the null hypothesis was rejected, and the alternative hypothesis was

accepted. It means there was a significant difference between the student's pre-test and post-test scores. Thus, it can be concluded that the student's reading comprehension significantly improves after they are taught reading comprehension through the morphological analysis strategy.

Discussion

For finding result 1, the description of data collected through vocabulary test shows that the students' scores were categorized as poor classification because before giving the students treatment by applying morphological analysis strategy to increase the students' vocabulary acquisition, their scores were low where most of the students (35.71%) got poor classification with the mean score 58.57. After giving them the treatment by applying morphological analysis strategy to increase the student's vocabulary acquisition, their vocabulary acquisition has increased with a mean score (84.28) and is categorized as good classification where most of the students (50%) got very good classification. It means that the total scores between the result of pre-test and post-test were different.

Based on the previous explanation, it can be seen that the students in the post-test (mean = 84.28) are better than the score in the pre-test (mean = 58.57). After applying the t-test formula, the result of the computation of the t-test was 7.75. If it is consulted with the t-table value 2.052 with the degree of freedom (df) = 28 - 1 = 27 and level of significant $\alpha = 0.05$, this means that the t-test value (7.75) is higher than the t-table value (2.052) were significantly different. It means that the student's vocabulary improves significantly through the morphological analysis strategy.

For findings result from 2, the data analysis result of the research proves that the use of morphological analysis strategy in teaching reading comprehension can enhance the student's ability to comprehend reading text. The students' score proves this statement before and after given treatment which was significantly different. In the pre-test, the student's mean reading comprehension score was 54.64 and categorized as poor classification. Meanwhile, the student's reading comprehension has improved after implementing a morphological analysis strategy in learning reading comprehension, with the student's mean score being 80.51 and categorized as a good classification.

Besides that, the result of the t-test calculation shows that the t-test value (9.242) is higher than the t-table value (2.045) at a level of significant 0.05 with df = 27. This means that using morphological analysis strategy enhances the student's comprehension of reading text.

Conclusion

The findings, as mentioned earlier, do convince us that morphology gives students the ability to analyze the process of the formed words. The following is a statement of conclusions drawn based on the findings.

Morphology allows students to analyze how words are formed and how many words are produced to reveal appropriate strategies for teaching vocabulary and reading comprehension. The results showed that the use of morphological analysis strategies could improve students' vocabulary acquisition and understanding of reading texts.

Morphological understanding can help students develop their vocabulary, and students with greater morphological understanding also have higher reading comprehension. Thus, understanding morphemes is important for teaching students vocabulary mastery and reading comprehension.

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