MEASURING MORPHOLOGICAL KNOWLEDGE AMONG SECONDARY SCHOOL STUDENTS: IMPLICATIONS FOR EFFECTIVE VOCABULARY ACQUISITION

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Abstract

The aim of this study is to investigate the morphological knowledge among ESL secondary school students. As English text has many complex words, and understanding them can be problematic to ESL struggling students. Thus, having knowledge of morphology is deemed vital for their vocabulary acquisition. 110 ESL secondary school students' morphology knowledge was assessed based on their analysis and synthesis ability in this study. The Morphemic Analysis Test was employed to measure the students' ability to decode morphological units in English complex words. Opinion Survey questionnaire was used to identify whether the students are interested to learn a new strategy that can aid them in learning morphological units. T-test and descriptive statistics were employed to report the results of the study. The results indicated that the students have limited knowledge of morphology as they lack the ability to analyse morphologically complex words. However, the students expressed their interest to learn the proposed strategy to learn morphological units. This finding implicates that there is a need for a strategy on learning morphological units that can facilitate students' vocabulary acquisition. The study thus recommends morphemic analysis strategy so that students can acquire vocabulary effectively by unlocking the meaning of complex words.

KEY WORDS: MORPHOLOGY, VOCABULARY, MIXED ABILITY, SECONDARY SCHOOL STUDENTS

Background of the Study

Knowledge of word part meaning or morphological knowledge/morphological awareness can be a powerful tool for students to acquire vocabulary (Kieffer & Lesaux, 2007). Kuo and Anderson (2006) suggest that when students are provided with morphology knowledge (how words are formed through affixes and base words), they know more words and are able to comprehend complex words in their readings. Ferguson (2006) states that students can understand a large number of the complex words they encounter in their texts if they know how to decode the complex words into smaller morphological units. According to Ferguson, base words and affixes (prefixes and suffixes) are part of the morphological knowledge which can help students to unlock the meaning of words. She asserts that morphological knowledge is essential because secondary school students are faced with more difficult texts and complex vocabulary; they need strategies to help them decode the words for better understanding. This finding is also supported by Ebbers (2009) that secondary school texts contain many complex words and students' abilities to analyse and decode these words are essential for their reading comprehension.

Statement of the Problem

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According to McBride-Chang, Wagner, Muse and Chow (2005), students develop awareness of morphology throughout their childhood and into their adolescence and they generally understand how morphemes (prefixes and suffixes) are attached to words. However, according to Feldman (1993), students can be at very different levels in their awareness of affixes because “the number of inflectional affixes is severely limited relative to the number of derivational affixes” (p. 70). Zhang and Koda (2013) emphasize that students acquire inflectional affixes earlier than derivational ones, as early as in the lower primary, but derivational affixes are learnt through the schooling years and this learning process continues to adulthood. Friedline (2011) on the other hand, mentions that ESL students at different levels of proficiency (low, intermediate and advanced) have problems acquiring morphological knowledge, especially derivatives.

Comprehension of complex words is a main problem among struggling students in the secondary schools because these students lack the ability to analyse word parts or morphology to decode the word meaning (Ferguson, 2006). In the local setting, most of secondary school students are still unable to acquire or even comprehend the language even after eleven years of learning the language at the primary and secondary levels (Jalaluddin, Mat Awal & Abu Bakar, 2008). A study conducted among secondary school students shows that the most obvious weaknesses of the students lies in the area of morphology. Students face problems in the areas of prefixes and suffixes where they represent 60% of total grammar mistakes in language committed by the students (Jalaluddin et al., 2008). Students face problems with affixes such as plural inflection: -s, -es and -ies; adverbs: -ly and comparatives and superlatives: -er and -est (Jalaluddin, Mat Awal & Abu Bakar, 2008). Secondly, spelling errors occur due to inappropriate use of derivational morphology, for examples, base (e.g., noise and breeze), and derived (e.g., noisy and breezy) forms (Jalaluddin et al., 2008). As a result, the lack of morphological knowledge among the local ESL learners contributes to the weaknesses and inability to acquire English vocabulary (Jalaluddin et al., 2008).

Likewise, the researcher’s experience of being an English teacher in secondary schools for more than a decade shows that secondary school students mainly make errors similar to the findings mentioned by the local researchers; this indicates that there are universal types of morphology-related errors and that the patterns of mistakes are rather common. Students are in a state of confusion in using the suffix *ed* as a mark of past tense and as a mark of passive form; -s between plural mark and 3rd singular mark. Sometimes, they generalize the idea of adding -s in both cases; as a plural mark and a 3rd singular mark. Akande (2005) and Hamdi (2012) affirm that such errors are a result of their under-developed linguistic awareness such as morphological knowledge. Therefore, it is the experience of working with such students that has given much drive to the researcher to conduct this research. On top of that, as Kaweera (2013) reminds, if this problem is not dealt with care, it would be an ongoing concern in the body of research knowledge on ESL learners.

Objective of the Study

The aim of the present study is to investigate the morphological knowledge among ESL secondary school students. Students’ morphology knowledge in this study is assessed based on their ability to identify the smallest units in words and to decompose words for accessing their meaning. This study is an attempt at empirically investigating the morphology knowledge of ESL students in Malaysia so that a vocabulary learning strategy (morphemic analysis) can be proposed to facilitate vocabulary acquisition among struggling students effectively. The study can be of great importance for students,

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teachers, scholars, and syllabus designers so that more improved materials and methods for teaching and learning morphemes will be developed and implemented.

To achieve the objective of the study, the following research questions were formed:

1. Is there a significant difference in students' performance in analysis tasks and synthesis tasks?
2. What is the level of morphology knowledge among ESL secondary school students?
3. What is the students' opinion on a new strategy (morphemic analysis strategy) that can improve their knowledge of morphology?

The hypotheses of the study are:

H1: The secondary school students have a high level of morphological knowledge.

H2: There is a significant difference in students' achievement in analysis tasks and synthesis tasks.

LITERATURE REVIEW

Theoretical framework

The theoretical framework of the current study is based on morphemic analysis strategy. According to Baumann et al. (2002), numerous studies indicate that students can effectively learn the meanings of new words through a variety of vocabulary learning strategies. They argue that it is impossible for students to learn all the words in the language classrooms because of the infinite number of words students must acquire and limited instructional time. Thus, vocabulary can be developed through the application of linguistic knowledge in the form of morphemic analysis (Baumann et al., 2002). This finding is further supported by Harris (2011), as there are a large number of words students are expected to learn, and teachers have limited time to teach them; introducing morphemic analysis strategy might be a possible way to help students to acquire their vocabulary independently and effectively.

Morphemic analysis involves unlocking a word meaning by examining its morphemes, or meaningful parts, such as base words, prefixes and suffixes. Nagy and Scott (2000) acknowledge the prevalence of linguistic cues by noting that "morphology is the major source of information than context to an ESL learner who comes across a new word" because of their limited English proficiency (p. 275). Morphemic analysis strategy has the potential to equip a learner with the ability to decode the meanings of complex words independently (Baumann et al., 2002).

Relevance of morphology for second language learning

According to Ferguson (2006), since about 30 root words, prefixes and suffixes provide the basis for more than 14,000 commonly used words in English language, it is imperative to consider the importance of a strategy involving morphological awareness to acquire vocabulary, particularly in the ESL context (Al Farsi, 2008). According to Al Farsi, students are able to decode complex words when they have morphological knowledge and awareness in morphemic analysis strategy (Ferguson, 2006). In addition, Talerico's study in 2007 proves that morphemic analysis strategy facilitates students' morphological knowledge and she strongly suggests the strategy for effective vocabulary acquisition.

Morphology and vocabulary

Lowie (1998) demonstrates that with the power of morphological knowledge, students can achieve a tremendous expansion of their vocabulary because morphology can be a helpful tool to facilitate the

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acquisition and use of words. Lowie points out that research into the acquisition and retention of second language vocabulary has shown that newly acquired words are better retained if they were inferred through linguistic cues. Lowie (1998) affirms that morphological cues for word decoding in a second language are essential to vocabulary acquisition. Kieffer and Lesaux (2007) argue that, “when it comes to learning English language, a little knowledge of root words, prefixes and suffixes goes a long way” (p. 1).

Morphological knowledge

Morphologically complex words are formed through three processes: base words, prefixes and suffixes (Zhang & Koda, 2013). There are eight inflectional affixes in English, and all are suffixes. The function of inflection is to indicate grammatical relationship between words in a sentence, e.g., the cow eats grass / cows eat grass. Inflectional affixes appear to be stable in function and meaning (Saif, 2011). Awareness of inflectional morphology is a comparatively early acquired competence (Zhang & Koda, 2013). However, individual differences with inflectional morphology exist, especially with inflectional suffixes -s, -ed, -ing, -er, and -est (Windsor, Scott, & Street, 2000).

Meanwhile, derivation is a process where new words are formed by adding prefixes and suffixes to base words, for example, the root nation is exploited to produce national, nationalist, nationalization, etc (Saif, 2011). There are a large number of derivational suffixes and prefixes in English (such as -ness -ly, -al, -able, -er, etc). The understanding of derivational morphemes emerges later and continues to develop over a longer period of time, with the more advanced derivational awareness possibly not fully developed until early adulthood (Carlisle & Fleming, 2003). This later development is because of the large number of derivational affixes and the process involves phonological or/and orthographic changes (e.g., decide and decision), which leads to change of the meaning and grammatical category (Zhang & Koda, 2013).

METHODOLOGY

Design

This was a single-subject design, quasi-experimental study. This design was chosen because students' performance can be measured and a treatment or strategy can be introduced, withdrawn or changed (Sekaran & Bougie, 2010).

Participants

The study was carried out on 110 Malaysian secondary school students in an urban setting in Malaysia. The participants were upper secondary school students, aged 16. They were of mixed ability (low, mediocre and advanced proficiency) male and female students. The number of samples was deemed appropriate for this study as Fraenkel and Wallen (2009) recommend a minimum of 30 individuals for experimental studies.

The participants were chosen as they have basic reading skills and their secondary school texts are dense with morphologically complex words (Ebbers, 2008). Moreover, low and advanced proficiency students can make use of morphological knowledge to infer the meaning of words (Carlisle & Stone, 2005; Ferguson, 2006; Singson et al., 2000).

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Instrumentation

Morphemic Analysis Test

The Morphemic Analysis Test adapted from Gomez (2009) was employed to measure the students' ability to reflect and manipulate morphemic units in English. The test consists of two subtests: Analysis Task (15 items) and Synthesis Task (15 items) that involve the use of prefixes and suffixes. Participants broke down complex words into smaller meanings (Figure 1) and added affixes to create new meaning (Figure 2).

Figure 1 Morphemic Analysis Test (Analysis Task)

Identify the smallest units in words for each of the following words, in the order that they appear in the word.

Example: restless = rest + less + ____

1. Personally = _____ + _____ + _____

2. Undeniable = _____ + _____ + _____

3. Approving = _____ + _____ + _____

Figure 2 Morphemic Analysis Test (Synthesis Task)

Complete the given sentences based on the given words in the left corner and write in the provided blanks

Example: Football. My uncle is a footballer.

1. six The horse came in _____.

2. produce The movie was a grand _____.

To ensure the reliability of the test, the Cronbach alpha reliability indices were calculated for the Morphemic Analysis Test used in this study. The alpha index for the test was high, 0.81 (Table 1).

Table 1 Cronbach's Alpha for Morphemic Analysis Test (n=110)

Instrument	No of Items	Alpha
Morphemic Analysis Test	30	0.81

According to Sekaran & Bougie (2010), a test that has an alpha index more than 0.70 is regarded to have a high reliability standard and is good for classroom tests.

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Opinion Survey questionnaire

Opinion Survey questionnaire (adapted from Friedline, 2011) was distributed to the participants in order to find out the participants opinions about learning a new strategy to develop morphological knowledge that can facilitate their vocabulary acquisition (Figure 3).

Figure 3 Opinion Survey questionnaire

Opinion Survey: Please rate the following statements from 5 (strongly agree) to 1 (strongly disagree) based on your own opinions of the morphology training	
Statements about the proposed morphemic analysis strategy	Agree Disagree
1) I knew a lot about word parts before this test	5 4 3 2 1
2) This test helped me to know more about word parts	5 4 3 2 1
3) I want to learn a way to answer the questions	5 4 3 2 1

Sampling method

The participants were chosen through purposive sampling. It involves choosing participants that have some common characteristics that suited the purpose of the study through non-randomization technique. Dolores and Tongco (2007) point out that this technique is appropriate as long as the needed information is obtained.

Procedure

First, the participants were informed about the purpose of the study, and were assured of the confidentiality of their identity and findings. They were also made aware that their involvement would not affect their school grades. Then, the participants' consent was obtained and Morphemic Analysis Test was administered. It was a paper and pencil test and was held in a predetermined location. After the results were made known to the participants, they completed the Opinion Survey questionnaire about their opinions on learning a new strategy that can help them to develop morphological knowledge.

Data coding

When a participant selected a correct answer, he/she received one point, and there were a total of 30 possible points on this test. One point was given if the item was correctly used in the context of the word. No credit was given if the item was misspelled or deviated from the correct answers.

Data Analysis

T-test and descriptive statistics were employed to report the scores of the participants on the Morphemic Analysis Test and the findings of the Opinion Survey questionnaire.

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RESULTS

The T-test was used to compare the mean scores of the participants' performance on Analysis and Synthesis Tasks. The results revealed that participants were similar in both tasks ($t(32) = 0.3276$, $p < .05$) as shown in Table 2.

Table 2 T-test results of Morphemic Analysis Test

Variable	N	Mean	SD	T	Df	Sig
Analysis Task	110	0.49	0.5	0.3276	218	.061
Synthesis Task	110	0.42	0.4			

$p < .05$

The results of research question 1 further determined that the level of morphological knowledge among ESL secondary school students in this study was low. The results showed that ESL students' performance on analysis aspect (0.49) was not significantly higher than synthetic aspect (0.42). Results from the Opinion Survey questionnaire (Table 3) indicate that ESL secondary school students are willing to learn a new strategy, such as morphemic analysis strategy, which can be helpful for them to learn about morphology and acquire vocabulary effectively.

Table 3 Descriptive statistic results of Opinion Survey questionnaire

Items	N	Mean	SD
1) I knew a lot about word parts before this test	110	3.07	1.11
2) This test helped me to know more about word parts	110	3.17	0.83
3) I want to learn a way to answer the questions	110	3.09	1.01
4) I would like to learn a strategy to acquire word part knowledge	110	3.02	1.00

To categorically describe the mean ratings in the above instrument (Opinion Survey questionnaire), Table 4 was used (Birisci, Metin, & Karakas, 2009).

Table 4 Categorical description of mean rating

Range	Description
1.00 - 1.80	Very low
1.81 - 2.60	Low
2.61 - 3.40	Moderate
3.41 - 4.20	High
4.21 - 5.00	Very high

Only 37% of participants said that they knew a lot about morphology before the test. 80% of participants agreed that the test helped them to know about analysis and synthesis aspects in forming words. Eighty-three percent of participants wanted to learn a strategy that can help them to answer the morphologically complex words. 85% of participants reported that they would like to receive training on a new strategy to develop their morphological knowledge to acquire vocabulary effectively. Overall, the participants were very enthusiastic about learning a new strategy and thus morphemic analysis strategy can be proposed as a way to develop ESL students' morphological knowledge.

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DISCUSSION

The results of this study indicated that the students performed poorly in the Morphemic Analysis Test. The students' ability did not differ much between both analysis and synthesis tasks, indicating that they lack morphological knowledge. Therefore, the primary hypotheses of the study were rejected (claiming a high level of morphological knowledge among secondary school students, and also existence of a significant difference between their performance in the analysis and synthesis tasks). This finding was in contrast with Khodadoust, Aliasin and Khosravi's (2013) study that claimed students were able to discriminate analytic ability from synthetic ability because they were aware of morphemic knowledge.

The study also revealed that students across different proficiency levels (low, intermediate and advanced) have problems in morphological units. This result was similar to the findings of Friedline (2011), which contend that second language learners from all proficiency levels struggle with morphologically complex words.

Nonetheless, students in this study were very positive in learning a new strategy that can help them develop morphological knowledge. This study proposes morphemic analysis strategy to facilitate students to develop their morphological knowledge. Kieffer and Lesaux (2007) strongly recommend morphemic analysis as a powerful word-learning tool for vocabulary development. Students can understand a large number of complex words if they are able to decode them into smaller morphemic units (Ferguson, 2006). According to her, root words and affixes are part of morphemic analysis and students can make predictions about word meanings when they have the awareness of morphemic analysis.

Based on the results, many aspects might have affected the students' performance. Firstly, it was carried out without any morphological awareness instruction prior to the assessment. Secondly, the tests may not be well modified to suit the participants of this study.

Recommendations for Further Study

A replication of this study is recommended after a morphemic analysis strategy training programme is established. This is important because it can highlight the importance of morphemic analysis awareness as a metalinguistic tool for vocabulary acquisition (Al Farsi, 2008).

In future, test items in the Morphemic Analysis Test should be well developed to be appropriately fit for ESL secondary school students, so that a constructive result can be achieved (Tatabei, 2011).

Conclusion

The current study examined the morphological knowledge of ESL secondary school students. This study is important as it can suggest a new strategy to develop students' morphological knowledge, which can aid in their vocabulary acquisition. Students' lack of ability in analysis and synthesis aspects and their willingness to learn a new strategy to develop their morphological knowledge lead to a promising introduction of morphemic analysis strategy as a vocabulary learning tool in the future. As Novak (2011) and Talerico (2007) point out, morphemic analysis strategy plays an important role in the acquisition of various language skills, such as spelling, reading comprehension, and specifically vocabulary.

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