The Impact of English Morphological Awareness on Vocabulary Enrichment: A Causal-Affect Relationship Research

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ABSTRACT

Limited vocabulary is one of the most common difficulties faced by EFL learners in Indonesia. Ignorance of English morphological awareness prevents students from expanding lexical words. However, research on morphological consciousness is relatively rare. Therefore, this study aims to examine the impact of morphological awareness on EFL learners' vocabulary. The study used a causal-effect relationship research design. The population consisted exclusively of students of the English and Management Studies program at Universitas Mahasaraswati Denpasar (N=1360). However, in this study, only 10% of the population (N = 136) was sampled using a systematic random sampling technique. There were two types of instruments: Instrument A was ten successful two-layer multiple-choice morphology tests and Instrument B was vocabulary completion tests. The data were then analyzed using statistical mediation regression and a series of independent-sample t-tests. The results indicated that the participants' perception of the derivation morphology was rated as "poor", which impacted their "poor" achievement. Morphological awareness significantly affected participants' vocabulary, with sig $0.000 <$ alpha (0.05) and tob $(21.601) >$ tcv (1.667). Furthermore, morphological awareness did not differ by gender ($t = 1.221$, $p = 0.224 > 0.05$), but by study duration ($t = 4.729$, $p = 0.000 < 0.05$) and academic courses ($t = 5.306$, with sig $0.000 < 0.05$). The results underline that explicit morphological instruction has a positive effect on EFL learners in predicting and promoting vocabulary. Therefore, through linguistic pedagogy, knowledge of English word formation rules has a much stronger and more positive effect on language competence and performance in EFL class than a purely non-linguistic approach.

1. Introduction

English morphological awareness encompasses all knowledge of how words are fundamentally constructed, or in short, it's about the word grammar. Words are developed into word formation rules through affixation, compounding, reduplication, conversion, acronym, and onomatopoeia. This knowledge can develop EFL students' vocabulary. In fact, vocabulary becomes the primary concern of language learning objectives as it plays an important role in conveying meaning, either through spoken or written English. Therefore, according to Plag, 2018; Liang, et al., 2021), morphological awareness can help students improve their language skills. Furthermore, according to Borghi et al. (2019), knowledge of word formation can increase students' motivation to learn the language. However, some previous studies (Franscy &

Ramli, 2022; Fitriyani & Nulanda, 2017) show that vocabulary is more influenced by non-linguistic elements such as teaching-learning methods and talents. In fact, it is considered weak to claim that learning the English language (ELL) can be achieved without considering the linguistic role. Therefore, the morphological awareness intervention can lead to a larger number of English word entries.

However, morphology lessons become less important in English classes in Indonesia, which is why learners fail to develop their vocabulary. Morphological instruction in EFL classes focuses on solving vocabulary difficulties (Borghi, et al., 2019). Limited vocabulary is one of the most common problems learners face when developing language skills (Franscy & Ramli, 2022; Fitriyani & Nulanda, 2017). Knowing the derivation markers mentioned

above allows learners to determine word class and predict meaning based on the position and function of words in sentences (Afri & Putra, 2021). In the reading text, there are mostly morphological markers that can make learners stop reading (Tahaineh, 2012). If they don't understand the markings, they will spend a long time consulting the dictionary for the meaning (An & Thomas, 2021). This long dictionary consultation weakens the motivation to read. Therefore, according to Yang & Dai (2011), learners can get clues to the written or spoken ideas if they have a good understanding of English morphology. This condition, according to Bailey et al. (2021)., morphology lessons can be one of the ways in solving vocabulary problems. Therefore, examining the impact of morphology teaching on EFL learners' vocabulary can lead to an appropriate strategy for improving learners' vocabulary.

There have been limited studies concerned with the causal-effect correlation between English morphology and vocabulary enrichment. The previous findings mostly reveal vocabulary teaching strategies (Reis & Fogarty, 2022; Kay & Adnyani, 2021; Kalsum et al., 2021) In fact, these findings have not described the impact of morphological awareness on the increasing number of vocabulary entries. However, some findings that are concerned with morphological intervention revealed theoretical evidence that this study refers to. Apriyani & Ilma (2020) claim that there was a "fair significant correlation" between students' morphological awareness and their vocabulary mastery and morphological awareness contributed as much as 21.9% toward students' vocabulary mastery. Meanwhile, (Arviyolla & Delfi, 2022) indicated a "positive and strong" correlation between students' morphological awareness and vocabulary mastery. However, concerning the specific language skill, Nurwati (2013) finds evidence that morphological awareness gives a 50.69 % contribution to writing ability and they are significantly correlated.

All findings referred to this study proved that morphological awareness is mostly correlated with vocabulary mastery. However, none of the studies reveal a more specific impact of derivational morphology instruction on learners' vocabulary enrichment. Therefore, this study examines not only the impact of morphological awareness on EFL learners' word entries but also determines whether the comprehension of morphology and vocabulary differ based on gender, length of the study, and educational background.

Given the previous research on which this study draws, it is easy to predict that there is a connection between morphology as the study of word structure and vocabulary structure. Theoretically, it can be said that a vocabulary is a group of lexical words that can only be learned and understood based on their morphological structure. However, how morphology lessons affect the number of word entries and whether

vocabulary is related to language proficiency requires further intensive investigation. This study strongly believes that awareness of word formation rules in morphology classes will positively influence and develop EFL learners' vocabulary mastery. Therefore, the results of the study provide a general contribution to the development of word entries through word reconstruction, in which words are morphologically broken down into smaller units.

This study can provide a new perspective to promote English vocabulary literacy. So, teachers can map the language learning goals and strategies of language teaching through a linguistic pedagogy approach. So, this study believes that English vocabulary literacy can be strongly and positively impacted through morphological awareness that is significantly correlated to language proficiency. So, the roles of the linguistic pedagogy approach contribute a better view than word memorizing-based learning.

Considering the limitations of the study, this study only focuses on (1) the conceptual level of students' derivational morphology, and (2) the differences in students' knowledge based on gender, learning experience, and academic courses. Therefore, this study proposes two research problems: Does English Morphological Awareness (EMA) significantly affect participants' vocabulary proficiency and how do EMA and vocabulary proficiency differ by gender, length of study, and academic courses?

2. Literature Review

This study summarizes and synthesizes the previous theoretical knowledge and statements consistent with the morphological process. The discussion of English derivational morphology cannot be separated from morphological segmentation through a word-formation process. According to Gaston et al. (2021), a derivation is a morphemic process that generates new lexemes. This means that derivations are different word forms from different paradigms. Based on this statement, this study clarifies that a lexeme is the smallest abstract lexical unit, either simple or complex word forms in a paradigm that is usually written in upper case. For example, REQUIRED; requires, required, require, and requirement. Each affix inserted into this lexeme consists of several morphemes that differ in word formation rules, either by inflectional or derivational morphemes. The discussion of derivation morphology is presented in three subtitles: The conception of derivation morphology; Derivation prefix and derivation suffix.

2.1 English Morphology Awareness

Conception and morphological awareness have the same terms for an individual's knowledge of word structure. According to Asaad & Shabdin (2021), the concept of derivational morphology refers to an individual's awareness of the morphemic structure of a

word and their ability to reflect and manipulate that structure. Furthermore, Stump (2019) adds that the study of morphology in word forms is usually viewed as segmenting words into morphemes and determining the entire syntactic class of word forms. This means that all words can be segmented into smaller meaningful units. For example, the word il-logic-al-ly consists of three morphemes, namely the prefix -il, which marks the negative meaning of the adjective as logical, and the morpheme -ly of the adverb. This word formation thus changes the semantic category of the original word. However, cats are composed of two morphemes: cat as the root word and the suffix -s as the plural marker. The second process is called inflection, which only determines grammatical categories. So, the core theory of morphology is morphemic.

This view is consistent with Manova & Knell (2021) who state that: 1) derivation is a morphemic change that produces a word with a different morphemic identity; 2) two words that are the same but have different lexical meanings; 3) The derivation rule is a chronological order rule. From this explanation it can be seen that the derivation occurs not only in different word classes but also in the same word but with different lexical meanings, furthermore, the derivation has a limited distribution but very different affixes. The formation of the derivation thus consists of a complex structure containing the same distribution class as the members of the word class. The derivation tends to be core layer formation. This process tends to be statistically more diverse but more limited in distribution and certainly shows a change in word class.

Based on the theoretical review of this concept, this study summarizes the review that the concept of morphological derivation consists of (i) several principles related to the morphemes of a language and (ii) morphotactics, namely restrictions on how morphemes are allowed to be appended, and (iii) spelling changes that may occur due to morpheme combinations.

2.2 Derivational Prefix

The derivational prefix is a term in morphology where a word formation process occurs through the combination of the bound morpheme and the free morpheme at the beginning of the word. In other words, prefixing is the act of adding a prefix to the base with or without changing the part of speech, e.g., en- + rich (adj), enrich (V) or not- + agree (V) disagree (V). According to Mena & Saputri (2018), derivation formation is caused by changes in basic meaning when adding affixes to the stem of the word, e.g., unhappy (adj) becomes unhappy (adj). The two-word classes are the same but have opposite meanings, so these words fall into the derivational category. It also changes the base word class, for example, care (N) + ful becomes careful (adj) and the words careful + ly (adv) become careful (Adv). Adding suffixes to the base word leads

to a change in word class, from nouns to adjectives and from adjectives to adverbs of manner.

Dermawansyah et al. (2022) add the statement that from this combination there is a process of changing phonemes in the orthography and pronunciation due to the phonological process. Prefixes in English word formation can be grouped according to their meaning and function into negative prefixes, inverse prefixes, pejorative prefixes, level prefixes or measures, orientation and attitude prefixes, locative prefixes, time and order prefixes, number prefixes, and neoclassical prefixes.

The research which was conducted by Mahamu & Sofyan (2021) on the principle of morpheme recognition in English found (1) forms of indefinite pronouns, comparative level, superlative degree, and reflective pronouns; (2) singular and plural forms; (3) past participle form regular {-d}/ {-ed} and irregular {– n}; (4) forms of singular and plural nouns and present and past verbs; (5) homonymous forms; and (6) free and bound morpheme forms. From the results of the classification, morphemes can be identified based on word form, word class, and meaning that appears. Subsequent research, which was conducted by (Anita et al., 2014) found that the level of student competence in the word recognition process in morphological knowledge needed to be increased because it was still categorized as moderate.

In general, this study summarizes this theory that the presence of base-form prefixes does not change the base form of the part of speech, but only provides a semantic modification of the base form. However, the combination of these morphemes results in phonemic change, either regressive or progressive assimilation. For example, the alveolar nasal becomes a velar nasal when followed by a velar consonant.

2.3 Derivational Suffix

Phonological awareness also covers how the words are formed in such a way as to change the grammatical category, lexical form, and semantic meaning by adding suffixes. According to Berg & Aronoff (2021), suffixation is the process of adding bound morphemes as a suffix to the end of the base form with or without changing the basic word class, for example, speak (V) + -er becomes speaker (N), speech (N) + - less turns into speechless (Adj) 'without words'. In contrast to prefixation which tends to change the meaning, it does not change the word class. The presence of suffixes in the basic form tends to change the basic word class (Utami & Mujadidah, 2021). Suffixes in derivational morphology do not play too much semantically on the basic form (Fernández Alcaina, 2021). Its main function is to change the basic form of word class (Mahendra & Indrawati, 2017).

However, this study presents a perspective that suffixes in English word formation can be classified into several categories based on the resulting word

class of their morphological process. These categories include: (i) denominal suffixes, (ii) deverbal noun suffixes, (iii) deadjectival noun suffixes, (iv) denominal adjective suffixes, (v) deverbal adjective suffixes, (vi) adverb suffixes, and (vii) verb suffixes.

Based on the above theoretical explanation and the empirical studies, this research emphasizes some basic principles of the conception of the derivative morphology. The concept to which this study refers is the ability of students to identify morphological derivation forms and to explain changes in word forms and meanings from morphological processes in a holistic and detailed way so that new forms of the mechanism of these changes can be predicted. The basic principles are (i) derivational morphology is the process of word formation by attachment; (ii) Affixation is the merging of morphemes in basic words by adding morphemes as prefixes and morphemes as suffixes, which can change the meaning and class of words; and (iii) the context of the sentence strongly determines the choice of derivation form. For this reason, this study predicts that the level of student perceptions of the derivational morphology is determined by the context of the sentence. However, students' ideas actually come from the learning process, and misunderstandings are caused by less learning experience.

3. Method

This present study enlightens the research problem of whether English derivational morphology awareness in morphological instruction significantly impacts the participant's vocabulary and how English derivational morphology awareness and vocabulary literacy differ based on gender, the length of the study, and academic courses. This study believes that morphological instruction of derivational awareness impacts EFL learners' vocabulary entries significantly to promote language proficiency. Considering the learners' characteristics, the learners' word formation rules and vocabulary might differ based on the length of the study and academic course, but female and male students have the same difficulties in both variables. The methods describe how this study was conducted to gain the findings.

This study used a quantitative approach with a nonexperimental causal affect relationship research design. Nonexperimental designs are research designs that examine social phenomena without direct manipulation of the conditions that the subjects experience (Cresswell et al., 2015). To see the difference in achievement based on gender, length of the study, and academic background, a comparative analysis was also applied. According to Pappas & Woodside (2021), comparative research enables the researcher to examine the differences between two or more groups on the phenomenon that is being studied. The independent variable of this study is derivational morphology awareness as the cause and its value is independent of other variables. Meanwhile, the dependent variables of this study are vocabulary literacy, gender, length of the study, and academic background as the effect. Its value depends on changes in the independent variable.

The population was 1360 students of Universitas Mahasaraswati Denpasar. This size is too large to cover in one single study due to much time-consuming and financial spending. Therefore, 10% of the whole population is taken for the sample. Furthermore, systematic random sampling is used to determine the number of students involved in the study. Systematic random sampling means there is a gap, or interval, between each selected unit in the sample. Here are some steps in determining the sample of the study. The researcher:

1) numbered the units on the frame from 1 to N (so, 1360 is the total population size),

2) determined the sampling interval (K) by dividing the number of units in the population by the desired sample size. A sampling interval of 1360/136 = 10. Therefore, K = 10.

   So, one unit was out of every ten units to end up with a total of 1360 units in the sample,

3) divided the entire population into 10 groups each of which consists of 136 students. Then the first group (group A) contains 136 students the second group (group B) with serial numbers, and so on until group J, and

4) selected a random start between one and K (10). So, the random start was one unit on the frame that was followed by every Kth (in this case, every tenth) unit after that first number. Group A: 11, 22, 32, 42, 52, 62, 72, 82, 92, 102, 112, 122, 132, Group B: 142, 152….232, Group C: 342,…442, and until 1360.

The sample was divided into two different groups. They were 68 from the English study program (ESP) and another 68 students from the management study program (MSP). ESP students have learned English morphology, but MSP has learned general English. For the gender differences, this study involved 68 male students and 68 female students. For the length of their study, 68 students were in semester 2, and the same number of students were in semester 4.

Data were collected through two tests. Test A was used to measure students' morphological awareness and test B was used to measure vocabulary literacy. The type of test was two-layered multiple-choice test items. First-layer of the multiple-choice test was used to measure students' ability to identify the correct derivational morphology within four choices. Meanwhile, the second-layer items had four options containing the reasons for choosing the form in the first layer.

The number of questions tested was 16 questions consisting of 8 questions to measure the conception of prefix derivation, and 8 questions for suffix derivation. Each item was arranged according to the rules for writing multiple-choice questions. During the pandemic, to avoid face-to-face interactions, the test was prepared and distributed using a Google Form, and a question link was emailed to participants, and they had to answer based on their understanding. 16 test items were examined by 5 experts consisting of 3 lecturers in the faculty of teacher training and education and 2 English senior high school teachers. A consensus was reached among the experts and only 10 items were declared eligible for testing. It can be seen from the test item analysis. The item difficulty level (FV) and item discrimination index (DV) in the test were calculated and presented in Table 1.

Table 1. Test Item Analysis

Test item	FV	DV	Criteria
1	0.339	0.371	good
2	0.339	0.000	bad
3	0.323	0.323	good
4	0.395	0.306	good
5	0.258	0.129	bad
6	0.411	0.306	good
7	0.226	0.194	bad
8	0.339	0.355	good
9	0.266	0.048	bad
10	0.315	0.403	good
11	0.298	0.048	bad
12	0.306	0.355	good
13	0.355	0.387	good
14	0.331	0.339	good
15	0.323	0.000	bad
16	0.444	0.565	good

The results of the difficulty test item analysis (FV) above are interpreted into three categories, namely "difficult", "medium", and "easy". FV<0.30 is categorized as "difficult", FV 0.30 - 0.70 is categorized as "moderate", and FV > 0.70 is categorized as "easy". So, if FV < 0.30 or FV > 0.70 then the test cannot be used. Based on the FV in the table above, the difficulty level index of the questions ranges from 0.226 to 0.444. Meanwhile for the interpretation of the discriminating

index (DV), where DV 0.70 is categorized as "very good" (used), 0.40 DV < 0.70 is categorized as "good" (used), 0.20 DV < 0.40 is categorized as "enough", and DV < 0.20 categorized as "bad" (not used). Based on the data in the table, the discrimination index ranges from 306 to 0.565. There were 6 items in the test that were deleted (2, 5, 7, 9, 11, dan 15) because the discrimination value of the item was smaller than 0.20. So, there were only ten (1, 3, 4, 6,8, 10, 12, 13, 14, 16) test items used to measure the students' morphological awareness.

On the other hand, test B was in the form of fill in the blank test items taken from the lecturer's guided book approved by the institution head. Therefore, there was no trial test administered because they were considered valid and reliable. There were twenty items of filling the blanks where the students wrote the best word formation to complete. The score was objective; the correct one gets one. The results of the tests were then checked to determine the raw score, mean score, and average score. This study used parametric statistical mediation regression analysis because the data were normally and homogeneously distributed after applying the Kolmogorov-Smirnova and Shapiro-Wilk normality tests, where sig .053> p.0.05 and homogeneous test where sig .845 >p.0.05. A causal steps statistical test method with one-way linear regression was applied to find out the impact of morphological awareness on vocabulary literacy (Syafiq et al., 2022). In addition, a series of independent sample t-tests were applied to measure whether EMA of participants and their vocabulary literacy differed based on gender, length of study, and academic major.

There are two decisions in the causal-effect statistical test: the comparison of the statistical significance and the comparison of the t-count value with the t-table. The significance value is presented in ($P < 0.05$). If the significance value is higher than 0.05 ($P < 0.05$), English morphological awareness (EMA) significantly affects the participants' vocabulary literacy. On the other hand, if the significance value is lower than 0.05 ($P>0.05$), then the EMA does not affect the participant's vocabulary literacy; (2) the comparison of the t-count value with the t-table. If the t-count value is higher than t-table ($rob > rcv$), then EMA affects vocabulary literacy and vice versa, if the value of $rob < rcv$, then it does not affect literacy of English vocabulary.

To see the difference between EMA and vocabulary literacy based on participant characteristics, decision-making at this stage uses a significance value of 0.05. If the significance value is <0.05, then the student's EMA or vocabulary is significantly different based on gender, study range, and educational background. On the other hand, if the significance value is higher (> 0.05), then, EMA and vocabulary literacy do not differ based on gender, study range, and educational background.

4. Results

This study attempts to investigate the impact of morphological awareness on EFL learners' word entries. This research highlights the role of explicit morphological instruction in English language learning so that vocabulary problems can be mapped, and the number of word entries can be increased. The results of this study were grouped into 4 research findings, namely (1) the participant's morphological awareness, (2) the participant's English vocabulary, (3) the impact of morphological awareness on vocabulary literacy, and (4) differences in morphological knowledge and participant vocabulary based on gender, the length of the study, and academic course.

4.1 Morphological Awareness

The result of instrument A is categorized into correct and incorrect answers. The participants' correct answer is categorized as "high awareness" in English morphology because participants can answer two-layered questions correctly. However, incorrect answers can be classified into three awareness categories, namely "less awareness", "low awareness", and "poor awareness". Participants' English morphological awareness is categorized as "less" because they answer the first-layer questions correctly but answer the second-layer questions incorrectly. On the other hand, participants' morphological awareness is categorized as "low" because they answer the first-level questions incorrectly but answered the second-level questions correctly. Participants' morphological awareness is then categorized as "poor" because students answer both questions incorrectly.

The results of the first research question of whether English derivational morphology awareness significantly impacts the participant's vocabulary literacy are presented in the numeric data. The data were the scores of two-layered multiple-choice tests and were interpreted in different levels of criteria. Therefore, the level of students' English morphology awareness in each item can be presented in Table 2.

Table 2. Participants' Conception Level on Morphological Awareness

Answer	T/T	T/F	F/T	F/F
Criteria	High awareness	less Awareness	low awareness	poor awareness
N	F/%	F/%	F/%	F/%
1	52 (38%)	18 (13%)	26 (19%)	40 (30%)
2	76 (56%)	25 (18%)	20 (15%)	15 (11%)
3	58 (43%)	30 (22%)	28 (20%)	20 (15%)
4	81 (60%)	22 (16%)	15 (11%)	18 (13%)
5	90 (66%)	16 (12%)	10 (7%)	20 (15%)
6	73 (54%)	21 (15%)	9 (7%)	33 (24%)
7	47 (34%)	24 (18%)	16 (12%)	49 (36%)
8	60 (44%)	26 (19%)	14 (10%)	36 (27%)
9	47 (34%)	30 (22%)	20 (15%)	39 (29%)
10	56 (41%)	19 (14%)	21(15%)	40 (30%)
Total	640 (47%)	231 (17%)	179 (13%)	310 (23%)
Mean	47.06	16.99	13.16	22.79

Based on information in Table 2, the finding indicated 2 groups of participants; one group answered the questions of the two-layered multiple-choice test correctly and the other group answered the questions incorrectly. The total number of answers was 1360. The total number of correct answers regarding the participants' awareness of morphology was 640 gained by 64 participants and the total number of students and the number of incorrect answers was 720 obtained by 72 participants.

The average score of participants correct answers was 47.06 and the average score of the incorrect answer was 52.94. The participants' conception of prefixes and suffixes in this study was categorized as "poor". It can be seen from the data that 23 or 17% of participants had "less comprehension" because they only identified the derivation form of the words correctly but could not determine their semantic category. Furthermore, 18 or 13% of participants failed to identify the correct form of derivation but gave the correct reason. This indicated

that the participants were not familiar with derivational morphology. Participants selected the correct reason not because they understood but guessed it blindly. The data in the last column showed that 31 or 23% of participants had misconceptions because they could not identify the correct word formation concepts.

To determine the morphological awareness category, the total raw score of each student was categorized into specific criteria of "Excellent" (scores 84% to 100%), "good" (scores 68% to 83%), "sufficient" (scores 52% to 67%), "poor" (scores 36% to 51%), and "very poor" (scores 20% to 35%) This category directly reflects the level of awareness of English morphology. To clarify, the participants' English morphological awareness is presented in Figure 1.
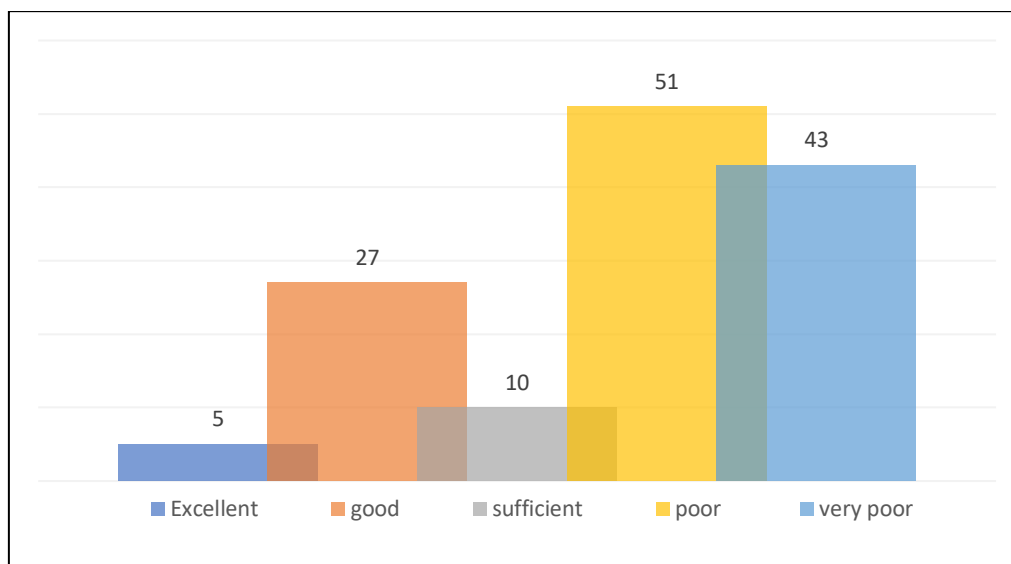

Figure 1. Participants' English Morphological Awareness

The finding presented in Figure 1 revealed the participant's awareness category of how the words are formed in English derivational morphology. From the figure, only 4% of the participant had 'excellent awareness", 20% of the participants had "good awareness", 7% of the participant had "sufficient awareness", 37% of the participant had "poor", and 32% participant had "very poor" awareness in English derivational morphology. From the data taken and analyzed from instrument A, the finding of the study revealed that the participants' awareness of English morphology is categorized as "poor".

This study found 4 main problems the students faced in determining the correct forms of word formation in derivational morphology, namely (i) the inability to determine bound morphemes as prefixes and the exchange of lexical meaning; (ii) unawareness of determining bound morphemes as suffixes and the exchanges word class and lexical meaning; (iii) difficulties linking bound morphemes as suffixes to word bases and bound morphemes as suffixes; and (iv) unawareness of the context given in the sentences.

4.2 Vocabulary mastery

Instrument B is a vocabulary test that measures participants' knowledge in determining the correct form and meaning of words or phrases from the perspective of morphological process. The type of question is objective, that is, there is only one correct answer in the form of "fill in the blanks". Students fill in the correct answers in the blanks provided in any place in the sentences with the base word in brackets as clues. Participants answer by changing the form of the word base according to its position in the sentences and the word class that is used according to the context. The number of questions is 20 and each question is assessed with "correct 1 gets 1". The total score is determined by the total score divided by the maximum score multiplied by 100. After obtaining the average score of each participant, the literacy vocabulary category is determined. The total mean score of each student was categorized into specific criteria of "Excellent vocabulary literacy" (scores 84% to 100%), "good vocabulary literacy" (scores 68% to 83%), "sufficient vocabulary literacy" (scores 52% to 67%), "poor vocabulary literacy" (scores 36% to 51%), and "very poor vocabulary literacy" (scores 20% to 35%). To find out more data, the participant's vocabulary literacy level is presented in Figure 2.

Table 2. Distribution of participant's vocabulary

Score	Frequency
100	2 participants
90	6 participants
80	3 participants
70	4 participants
60	8 Participants
50	9 Participants
40	21 participants
30	30 Participants
20	36 Participants
10	17 Participants

Based on the data obtained from instrument B, the total score was 4480 and the average score was 35.88. Referring to the range of value criteria, vocabulary literacy can be categorized as "poor", namely 36-52.

For the overview of the findings from the analyzed data, participants' vocabulary literacy can be presented in figure 2.
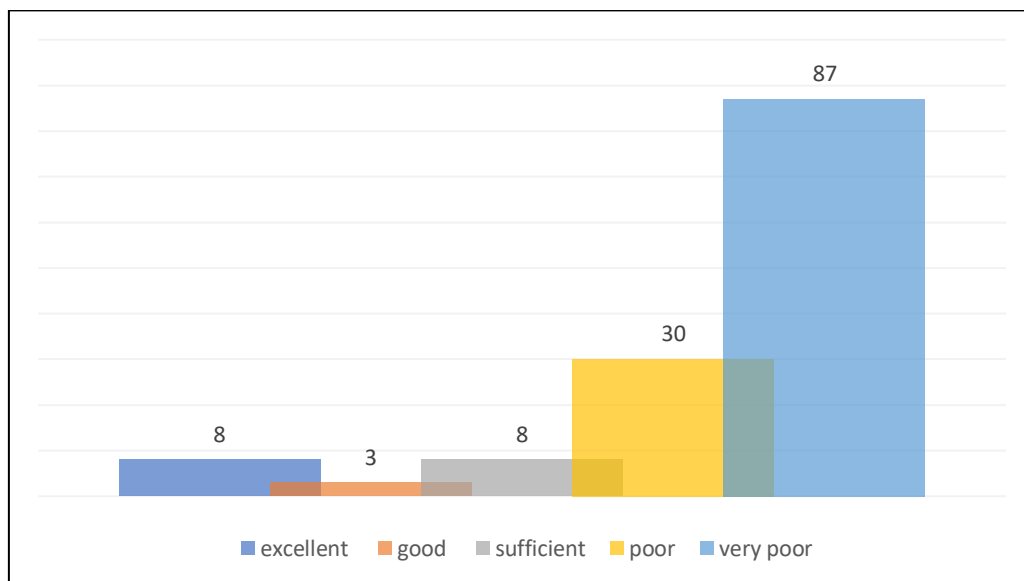

Figure 2. Participant's Vocabulary

Figure 2 indicated the participant's poor ability in identifying the correct forms of suffixes and prefixes and determining the word class in the post-lexical context. It can be seen that 8.6% of the participants had "excellent", 3.2% of the participant got "good", 8.6% of the participants had "sufficient", 30.22% of the participants had "poor", and 87.64% of the participants had "very poor" vocabulary literacy from EMA. The data analysis from instrument B showed that the average result of the gap-filling test was 35.88, meaning that 64.12% of the participants failed to determine the correct answer. The findings of this study indicate that the literacy morphology of the participants is in a low category. This picture not only reflects the low level of vocabulary through word formation in the morphological process but indicates language skills in general. The difficulties faced by students raise several important issues, namely, (i) participants' English lexicon entry only concerns a standard set of words that have definite root words, (ii) vocabulary of word formation is difficult to memorize but must be understood; and (iii) the context of the sentence is not considered as crucial by participants in EFL in terms of the word environment and the lexical category, therefore the participants can determine the appropriate word selection.

4.3 The Impact of EMA on vocabulary

The third analysis in this study consists of two proposes, namely (i) determining whether there is an impact of morphological awareness on participants' vocabulary awareness and (ii) measuring the level and pattern of the influence of morphological awareness on vocabulary literacy. For this reason, the finding taken from instrument A is compared with the finding taken from instrument B. This comparison used parametric statistics because the data are normally distributed and homogeneous. This study used parametric statistical mediation regression analysis that describes statistically (1) the measurement of the simultaneous test (F test) and (2) the significant measurement of the significance level of the F test (<0.05). The findings revealed that the significance value was less than 0.05 (F = 466.609, Sig .000 <0.05) then there is an impact of the student's awareness on their vocabulary literacy. Further analysis is to determine the significance level of the variables. The significance of EMA on vocabulary can be presented in Table 3

Table 3. The significance of EMA on Vocabulary

		Coefficients				
		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	t	Sig.
1	(Cons)	-6.339	2.152		-2.945	.004
	EMA	.896	.041	.881	21.601	.000

a. Dependent Variable: vocabulary

The EMA included in this study impacted participants' vocabulary achievement significantly since the result of the linear regression correlation test showed that Sig 0.004 < Alpha (0.05) and *tob* (2.945) > *tcv* (1.667) and that Sig 0.000 < Alpha (0.05) and *tob* (21.601) > *tcv* (1.667). Taking the analysis into account, this study found that Ho: p = 0 (there is no impact of EMA on vocabulary literacy) is now rejected. H1: p # 0 (there is a simultaneous impact EMA on students' vocabulary literacy) is accepted.

From the regression analysis, it can be interpreted that the EMA has a strong and positive impact on the students' vocabulary mastery simultaneously. That is, the more intensively the students understand English morphology, the broader they can develop their vocabulary. In contrast, the students who do not gain morphological awareness cannot develop vocabulary and of course, they have difficulties in reading and writing English.

4.4 Differences in vocabulary

Referring to the second subproblem, this study reveals that students' conceptions might differ based on gender, educational period, and academic major. For this reason, the t-test was applied. Associated with the characteristics of male and female students, Differences in EMA based on gender can be presented in Table 4.

Table 4. Differences in EMA based on Gender, Grade, and Department

Gender	N	Mean	F	Sig.	t	df	Sig. (2-tailed)
Male	68	49.41	4.566	.034	1.221	134	.224
Female	68	44.85			1.221	126.439	.224
Grade							
Year 2	68	37.79	6.797	.010	-4.729	134	.000
Year 3	68	54.71			-4.729	128.612	.000
department							
ESP	68	55.59	8.531	.004	5.306	134	.000
MSP	68	37.94			5.306	122.601	.000

The results of the independent sample t-test in table 4 above showed that female and male participants had relatively the same level of conception of derivational morphology. This can be seen from the results of the two-layered multi-choice test where the t-value of EMA was 1.221 and the p-value (>0.05) *(t = 1.221, p >0.05)*. This means that there was not any tendency for female participants to understand English word formation better than male students. Male and female students had the same difficulties in English derivational morphology. The next analysis is the extent to which differences in the conception of derivational morphology are influenced by the length of the study. Considering the finding presented in Table 3, this study confirms that the difference in the period of study can affect students' understanding of forming English words. This can be seen from the t-test with a value of -4.729 and a p-value was 0.000 *(t = -4.729, p<0.05)*. This value shows a significant difference based on the group of academic levels. Participants of semester 4 performed EMA better than participants of semester 2. The different academic departments have also an impact on the level of students' awareness of the word-formation process through derivational morphology.

The data in Table 3 show that there is a significant difference in the results measuring morphology awareness between English language students and management students. This statement is supported by the statistical results of the study, where the t-test showed that the p-value is less than 0.05 *(t=5.306, p<0.05)*. This means that there is a significant difference due to different academic backgrounds. Participants studying English morphology had higher scores than participants studying general English. There are differences in the level of ideas and misunderstandings between the students of the English-language study program and the students of the management study program.

Vocabulary competence can be expanded in this way by understanding the morphological process of words in explicit learning. Based on the above result, morphological awareness significantly influenced the students' vocabulary, in this case, it can be interpreted that the lack of EMA impacts the participants' limited vocabulary. This finding can of course be used as a theoretical and empirical reflection for the most pedagogical treatment possible. However, the independent-sample t-test is required to find out whether vocabulary competency differs by gender, length of study, and academic history. Differences in vocabulary by gender, length of study, and degree programs can be shown in Table 5.

Table 5. Differences in Vocabulary Mastery

Gender	N	Mean	F	Sig.	t	df	Sig. (2-tailed)
Male	68	38.18	.317	.575	1.182	134	.239
Female	68	33.76			1.182	133.011	.239
Grade							
Year 2	68	34.71	4.988	.027	-.628	134	.531
Year 3	68	37.10			-.628	125.986	.531
Department							
ESP	68	27.50	16.923	.000	-4.845	134	.000
MSP	68	44.26			-4.845	112.278	.000

Considering the data presented in Table 5, this study confirms that both male and female participants got the same problems in enriching vocabulary. This can be seen that the t-test was 1.182 and the p-value was .239 which was higher than 0.05 *(t = 1.182, p >0.05)*. It means that there are no statistically significant differences in vocabulary literacy based on gender. Moreover, different levels of education might influence different vocabulary literacy. In fact, this study revealed that year three participants' vocabulary literacy was not better than year two participants. It means that both groups had the same problems in vocabulary literacy. It can be seen from the statistical significance that the t-test was -.628 and P-value was 531 *(t = -.628, p >0.05)*. However, there was a significant difference in vocabulary literacy between ESP participants and MSP participants. These statistical findings revealed that t-value was -4.845 and P-value was .000 *(t = -4.845, p <0.05)*. It can be interpreted that ESP participants had more word entries than MSP participants.

5. Discussion

This study proposes two research questions that is explored through a quantitative approach method with

a causal-effect relationship research design. Therefore, there were two main findings from this study. The first result of this study showed that all participants were broadly classified to have a "poor" achievement in EMA. However, participants of English study program (ESP) who received phonological instruction had quite better comprehension and participants of Management study program (MSP) who did not specifically study morphology still had difficulty understanding the word formation rules in English. In comparison, while ESP participants were better at identifying the lexical words than participants in the MSP class, they also had trouble identifying the corresponding suffix and prefix markers, which significantly impacted their vocabulary. On average, the students' lexical entries were rated "poor" because they could not identify the correct forms of derivation morphology. After the morphological instruction, some participants of ESP achieved a "good" achievement in vocabulary, meanwhile, others had a "moderate" vocabulary, and the rest had a "poorly limited vocabulary. However, all MSP participants who did not have morphological instruction had "poor" vocabulary. As Bowers & Kirby (2010) and Goodwin & Ahn, (2010) revealed in their studies, this study statistically found that morphology awareness had a significant impact on participants' vocabulary enrichment.

Consistent with morphological notions and misunderstandings, the results of the two-layer multiple-choice tests showed that 47% of the participants correctly answered the derivation morphology. 17% of the participants, on the other hand, could only identify the correct form of derivation in the gap text, but could not explain why they used this form. In addition, 13% of 136 participants could not identify English prefixes and suffixes but could answer the argument part correctly. This ensures that the students did not understand them but blindly guessed the answers. Of all the questions tested, 23% of participants had misconceptions about English derivation morphology. This finding is consistent with Kieffer & Lesaux (2008) who find that the concept of derivational morphology has a positive impact on students' vocabulary in reading literacy. In addition, this study supports Schmitt & Zimmerman's (2002) earlier statement that concepts of derivational morphology can help learners develop more word inputs and Bowers et al., (2010) claim that the morphological awareness naturally enable them to perform the four language skills more proficiently.

The second finding showed that participants' morphological awareness did not differ by gender. (Dąbrowska, 2008). Female participants had the same understanding and ability to determine the suffix and prefix of the derivation as the male students. This means that the students had the same problems with word class markers. However, participants' understanding and ability in morphological awareness differed according to length of study and academic

course. Year 3 students had a better understanding of morphological awareness than Year 2 participants because they linked derivational morphology to postlexical context. Furthermore, ESP participants were better at derivation morphology than MSP students, but their comprehension was still rated as "poor" due to less practice.

By mastering vocabulary, ESP participants acquired better vocabulary compared to MSP participants. However, neither male nor female participants differed in vocabulary proficiency (McCarthy, 2008). Furthermore, the duration of the study had no influence on the vocabulary mastery of the MSP participants. All had poor English vocabulary. Both male and female participants had the same ability and difficulty in identifying, determining, and explaining forms of prefixes and suffixes (Sonbul & El-Dakhs, 2021).

However, the EMA students differed in terms of length of study and academic background. Second-year participants recognized fewer forms of English prefixes and suffixes compared to third-year participants. Although both ESP and MSP participants had the same problem in the EMA, ESP participants performed slightly better than MSP participants.

Consistent with gender differences in vocabulary proficiency, this study showed that students' vocabulary did not differ by gender. However, Zhonggen (2018) finds some evidence that female students were better than male students at promoting new vocabulary in playful classroom activities. However, the length of study now differed depending on the academic courses, with ESP participants providing more recognized vocabulary than MSP participants.

The finding of the study confirms that the misconception of derivational morphology is caused by 3 basic factors.

1) differences in the linguistic system

   The English word formation rules are different from Indonesian where the suffix in English is the prefix in Indonesian. For example, the word "keep" -ER (agentive) is interpreted as *peN-jaga* in Indonesian.

2) Multiple interpretations of English verbs

   The English verbs differ from Indonesian verbs that have contained a derivational prefix and suffix. For example, the verb 'to push' in Indonesian has obtained the prefix *'meN-dorong'*, and the verb "to buy" already has a derivational prefix and a suffix; *meN -beli-Kan* in Indonesian.

3) Words memorizing-based learning

   The last issue is the way the students memorize the English word formation may seem hard to keep the words in mind because memorizing is not the same

as how linguistic cognitive works (McBride-Chang et al., 2008). To support this statement, the two most difficult forms of derivational morphology are displayed in the test that participants faced.

Several confirmations like Zhang (2016) and Bowers et al., (2010) on the three points above, elaborate that (i) the differences in language systems are theoretically dynamic. This means that changes in language form are due to a universal language system, both in Indonesian and English or in any language like English-Chinese (Zhang, 2016). For example, adding morphemes as prefixes or suffixes to Elementary words undergo a phonological (morphophonemic) process through phoneme simulation; (ii) the mental process of word formation does not necessarily change category morphologically, there are exceptions, often referred to as null conversion; (iii) implicit learning is required so that the basic concept of word formation in the source language L1 can be a means of understanding the derivational morphology of the target language (L2). Starting from these three statements, derivational morphology is a mental process of assembling morphemes into different lexical derivational forms and semantic categories (Farris et al., 2021)

This study supports some previous research findings conducted by some researchers in Indonesia. Regarding the above findings, Syaputri (2019) revealed that "Indonesian word pattern construction" influenced students' errors in determining English word construction. Along with the research finding, the author found that the students could not identify derivational markers containing grammatical, lexical, and semantic properties. However, this study did not mention any roles of morphological awareness in the context of language skills. In fact, morphological awareness is useful to deduce meaning in reading and morphological performance is crucial to help students use the word entries in writing and speaking skills.

Furthermore, Agustiani & Gumartifa (2020) revealed the reasons respondents used morphological forms are classified into 9 categories; entertainment, habits, efficiency; saving space and time, simplification, aesthetics, narcissism, self-indulgence, uniqueness, and trend. However, self-contentment reasoning is the most dominant reason owned by respondents. That is, these morpheme forms can stimulate students in this research to find word forms from these morpheme combinations outside the examples given.

Regarding the role of morphology instruction, this study is in line with the finding found by Anwar & Rosa (2020) who indicated a significant role of morphological instruction in facilitating students at junior high school to learn English more easily with significantly greater achievement. It means that students with morphological awareness or students that are instructed in morphology gain better achievements in their English learning, resulting in better English proficiency.

Furthermore, the finding of this study was quite different from the research finding of Ramirez et al. (2014). They found that participants' English morphological awareness was moderate. Such a condition became a positive potential for the teacher to help the students solidify their knowledge in English word formation rules in the process of exploring vocabulary, dealing with reading comprehension, and fulfilling various English literary needs. This study recommends that both deductive and inductive English morphology interventions be given to EFL tertiary students in conjunction with appropriate practices that can continuously train their English morphology awareness.

In fact, this study supports the research findings of (Adam, 2018). The results showed that awareness affects 51.5% of students' vocabulary mastery. Therefore, it is certain that there is a significant correlation between students' morphological awareness and their vocabulary proficiency. Zhang (2015) suggests that morphology can be applied as a strategy to improve students' skills. Considering the impact of morphological instruction and vocabulary mastery, this study is consistent with the findings of research conducted by Abdillah (2018) who found that there was a significant association between morphological awareness and vocabulary mastery of seventh-semester students at the Islamic University of Malang. In agreement with this study, Akbulut, (2017) revealed some evidence that the higher the students' morphological awareness, the better their vocabulary mastery will be.

From the characteristics point of view, male students have the same problem as female students. This means that gender differences have no impact on students' understanding of morphology. However, the conception of morphology in this study differs based on differences in the level of study and academic majors. The factors that mostly cause students' derivation misconceptions are the difference in the linguistic system, the inconsistency of the morpheme switching mechanism, and words memorizing-based learning.

Regarding how the participants presented their morphological knowledge, different from the previous studies, the study applied two-layered multiple-choice tests to the participants by providing two levels of questions with 4 options each. This study has contributed the method how the conception must be measured. In fact, the previous studies only used true-false and simple multiple-choice test. According to Bass & Chambless (1994), the purpose of this type of test is to measure whether students had the best, good, sufficient, little, or poor awareness of derivational morphology. Thus, it can be known what

morphological processes are less or not understood at all by all participants. The measurement method used in this study provides guidance, knowledge stimulation, and reasoning anticipation. comments so that students' English proficiency can be realized.

Meanwhile, to improve the number of lexical entries, this study has a more effective way to measure the participants' performance than the instrument used in previous studies. However, this study gave "fill in the gaps questions". This type of test does not provide any options but a word clue form of the root word in brackets and the students write down the answers according to the context of the sentence. The purpose of this test is to measure participants' ability to identify the word class of the clues and the syntagmatic of the sentences. Explicit instruction is required to provide students with knowledge of word constructions. Spencer et.al (2015) showed that a one-factor model that included morphological processes and vocabulary knowledge provided the best fit to the data. In addition, modeling the response to explanatory items was found effective to examine sources of variance in the vocabulary and morphological awareness tasks. It can thus be concluded that the morphological and vocabulary knowledge level of the participants not only depends on gender differences (Simonsen et al., 2013), study duration and academic background, but also the appropriate explicit teaching model should be best considered.

Based on the discussion of the findings, this study clearly shares new knowledge of how explicit morphological teaching impacts the participants vocabulary and role of how assessment technique measures the number of lexical entries of the participants objectively. The findings contribute the evidence that with or without morphological instruction impacts the participants' EMA on the increasing or decreasing number of lexical entries. The more intensive students understand morphological awareness, the more word entries the students obtained and the better they can perform the English language tasks. Furthermore, morphological awareness can be instructed through communicative-based language teaching to increase EFL learners' involvement and motivation (Wardana et al., 2022).

On the contrary, without morphological instruction, participants gain fewer word entries, and they cannot perform better language tasks easily. From all consideration and comparison of the present research findings with previous theoretical and empirical findings, this study states that explicit morphological instruction strongly impacts the EFL learner's phonological awareness and the number of lexical entries.

6. Conclusions

Considering the role of English morphological awareness in the development of EFL students' vocabulary proficiency, two findings were uncovered.

The evidence elucidates that "with" or "without" a morphological instruction affects the size of English word entries. Based on all considerations and comparisons of the present research results with previous theoretical and empirical knowledge, this study underlines that morphological awareness significantly influences the number of lexical entries of EFL learners. Consistent with the characteristics of the learners in terms of morphological awareness and vocabulary, female and male students face the same difficulties in understanding English morphology and developing vocabulary. However, morphological awareness and vocabulary enrichment differ according to the length of study and academic courses. This study implies the use of both deductive and inductive English morphological interventions to be given to tertiary EFL students in conjunction with appropriate practice. Although this study has provided general evidence for the causal relationship between English morphological awareness and vocabulary in the EFL context, these results cannot cover the entire problem of linguistic phenomena because it is limited only on examining how English morphology awareness affects participants' vocabulary competence. Therefore, other aspects of linguistics are required for further study. For this reason, this study suggests that future researchers investigate more about the role of linguistics in enhancing EFL students' language soft skills. Finally, this study states that linguistic pedagogy instruction in English word formation rules in EFL class has a much more positive effect on language competence than a purely non-linguistic approach.

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