

Enhancing Chinese Learners of English Vocabulary Growth through Morphological Instruction

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Abstract

The present longitudinal study was designed to investigate the relationship between morphological instruction and vocabulary growth of Chinese learners of English in L2 contexts. The empirical data were collected and analyzed on the basis of 76 participants' instances. Two research questions were answered through discussing the results discovered in the experiment. The findings showed that focusing on delivering morphological processes of derivation including conversion, which is regarded as zero derivation, inflection and compounding played a significant role for students in accumulating new words efficiently. Explicit morphological instruction had a direct link for the learners to increase their vocabulary size and meet the lexical requirement to further their study in English. Pedagogical implications suggested that teachers could apply the beneficial outcomes of the study in curriculum design and teaching. Although the research gained some fruitful outcomes, the scope of the study was still limited, and further research should be necessary.

Keywords

Morphological awareness, morphological instruction, vocabulary growth, word-formation rules, Chinese learners of English

1. Introduction

Vocabulary plays a crucial role in English language learning. Chinese learners of English usually encounter problems regarding language skills of listening, speaking, reading and writing due to the limit of vocabulary size. The scholars, researchers and teachers always try to suggest some efficient and effective methods to the English language learners to increase their numbers of vocabulary. Many studies of vocabulary learning showed that there was a significant relationship between morphological awareness and vocabulary development through reading comprehension and writing (Schiff & Calif, 2007; Spencer et al., 2015; Zhang, 2012; Tighe & Binder, 2015; Tighe & Schatschneider, 2016; Vakinin-Nusbaum et al., 2016; Xie et al., 2019; Xue & Jiang, 2017; Zhang & Koda, 2012; Shen Qiao, Yingyi Liu, & Susanna Siu-sze Yeung, 2021). Learners do not need to be instructed with explicit language forms because, under the influence of communicative language teaching, they believed that learners could be fluent enough and communicated as well. It seemed that the forms of language did not play an important role in language learning. Such situation made some instructors, particularly EFL instructors ignored the explicit instruction of the language forms. Actually, language forms played a very important role in language leaning and communication. In order to communicate efficiently, learners had

to pay attention to the correct linguistic forms of the language indicated by Ellis (2001). Thus, form-focused instruction, such as grammar, vocabulary, error correction, phonology and morphology, should be adopted in EFL classroom. However, explicit language form instruction was marginalized by the advocators of language fluency. In order to balance the discrepancy caused by such marginalization, it is necessary to refer to accurate form instruction.

Regarding language form instruction, the core part is morphology. A lot of researches demonstrated that morphology had effective implications in either first or second language learning contexts. As it is known, morphology is the study of the structure of words linguistically. When it is applied in the language learning classroom, it helps language learners understand the word-formation rules referring prefixes, suffixes and roots. Learners can employ other processes such as compounding, shortening or clipping to increase their vocabulary size effectively. It seems that there is a significant relationship between the lexical growth and morphological awareness. On the basis of the situation, it should be necessary to develop the English language learners morphological awareness so as to increase their number of vocabulary and help English language instructors realize that morphological instruction can ease the English language learners to manipulate new words in their learning. When language learners become familiar with the derivational and inflectional processes of new English words, they can perform better in language learning (Zhang, 2012; Bae & Joshi, 2018; Bernstein et al., 2020; Stoffelsma et al., 2020; Carlise, 2000). Thus, the present study was designed to find out the significant impact of morphological instruction on enhancing the language learners of English vocabulary size and provide language teachers with some implications of applying morphological instruction in the EFL classroom. Two research questions were raised to testify the validity of the data collected in the research. Some pedagogical implications for English language teaching are provided for the convenience of benefiting students learning English.

2. The study of morphological awareness and instruction

As far as morphological awareness is concerned, a lot of researchers and scholars put more energy into investigating the effectiveness of morphological awareness in reading and recognizing novel words among different proficient levels of English language learners in L2 contexts, especially among low-word proficiency learners and young children. Bae and Joshi (2018) explored the role of morphological awareness in reading comprehension among Korean grade five and grade six primary students. They found that more and more scholars had interest in the cross-linguistic role of morphological awareness in literacy development (Bae & Joshi, 2018, p. 1822). But few studies revealed the contextual differences of language learning regarding the effect of morphological awareness on reading comprehension for young learners of English. Through their observation of the reading performance by grade five and grade six students, they proposed that morphological awareness contributed to the students reading performance more effectively.

Zhang and Koda (2013) employed Chinese learners of English to investigate the relationship between morphological awareness and reading comprehension. Even though Chinese and English belong to different language family in terms of language typology, the findings showed that it is necessary to instruct word-formation rules so as to improve students' reading comprehension performance.

Kieffer and Lesaux (2012) studied sixth graders of Spanish, Filipino, and Vietnamese speakers reading activities. They proposed that although young learners of English had different language backgrounds and linguistics features, morphological awareness made a significant direct contribution to reading comprehension via reading vocabulary (Kieffer & Lesaux, 2012, p. 1170). Zhang (2016) did a research with Chinese young learners of English for the purpose of investigating the relationship between morphological awareness and reading comprehension. The findings indicated that morphological awareness improved the young learners' reading comprehension. The effect of referring to morphological awareness for cultivating the learners' competence of reading was obvious and thus teaching students word-formation rules should be necessary.

In addition to the studies of the role of morphological awareness on reading comprehension, some scholars tried to explore whether it is effective in acquiring vocabulary knowledge for English learners with different linguistic contexts. Akbulut (2017) studied the students enlarging vocabulary at the university preparatory class through realizing morphological processes and proposed that the realization of morphological processes could be an effective method for English language learners to learn vocabulary knowledge. The study showed that there was the relationship between morphological awareness and vocabulary knowledge of students. The morphological awareness could be employed as a method for students in L2 context to learn English novel words. Stoeckel et al. (2019) employed 200 Japanese university students to assess the lexical knowledge needed for reading referring to vocabulary size test by Nation (2012). They argued that "the vocabulary size test as a measure of the lexical knowledge needed for reading should be used and interpreted with appropriate caution" (Stoeckel et al., 2019, p. 13). Masrai and Milton (2021) investigated the university students'

linguistic performance in academic context. The findings showed that in order for the students to communicate successfully in academic field, a large general vocabulary size was needed. Lam and Chen (2018) studied 156 students of Grade 1 and Grade 2 with English background learning French longitudinally over one year. The findings demonstrated that “morphological awareness from their primary language facilitated their vocabulary learning in their second language (Lam & Chen, 2018, p. 1893).

Since most studies of English learners’ vocabulary acquisition focused on the association of morphological awareness with lexical development and knowledge on the basis of the learners’ reading performance, some researchers deviated the direction of the study from psychological realization into classroom instruction. Investigations of the impact of morphological instruction on language learning especially vocabulary learning and acquisition tended to gain more attention in the pedagogical field. Carlisle (2010) reviewed 16 studies of the role of morphological awareness in reading and vocabulary development and indicated that it was useful to teach morphological rules to school children so as to cultivate the young learners’ reading ability. Goodwin (2016) argued that there was a strong link between morphological instruction and students’ linguistic performance. Appropriate morphological instruction could support the students’ word learning and thus “educators and researchers would likely benefit from prioritizing words that carry significant meaning and also link to other morphologically related words” (Goodwin, 2016, p. 93). Oz (2014) realized that language teachers could employ strategies to teach vocabulary referring to morphological awareness. Teaching students word-formation rules could facilitate the traditional type of vocabulary learning which mainly included memorization and dictionary use. McCutchen et al. (2021) instructed fourth and fifth grade American students with morphological rules for 12 weeks. They found that students who were taught with word-formation rules perform better in reading comprehension. The students even developed the ability to analyze the structure of the words and understood the meaning of words more accurately. The findings indicated that it was useful for the teachers to infuse clear instructions in word learning so that students at different levels of language proficiency could improve their writing and reading effectively. Badawi (2019) discussed the effect of morphological instruction on reading comprehension for Egyptian students learning English. Through analyzing data collected from 98 secondary school students, the results showed that delivering instruction of morphology had more significant effect on students’ reading comprehension. So it was necessary for EFL teachers in L2 contexts to employ morphological instruction in the classrooms. In a dissertation by Diaz (2010), the findings showed that utilizing clear morphological instruction could help learners of English in L2 contexts learn novel words more quickly and effectively. By delivering morphological instruction in the classroom, learners made a rapid progress in developing reading competence and grasping new words more efficiently. The study by Crosson et al. (2018) demonstrated that teaching students morphological rules could enhance the students’ performance in learning. The positive effectiveness of judging meanings of unfamiliar words was observed in the study. The findings provided some pedagogical implications for both teachers and learner when encountering lexical problems.

There were definitely many other studies and researches in terms of morphological awareness and instruction. The findings and results of the studies concerning employing the knowledge of morphology were applied effectively and efficiently by language learners and teachers. The consequences of applying the outcomes of those studies provided appropriate directions and implications for language learning. However, those studies and researches were more concerned about the effectiveness and efficiency of the morphological awareness and instruction on reading comprehension, vocabulary knowledge acquisition. Very few of them concerned about increasing language learners’ vocabulary in a longitudinal period.

3. Method

In order to figure out whether the association between morphological instruction and vocabulary growth existed in the process of vocabulary learning, an experiment was designed to collect empirical data to testify the assumptions proposed in two research questions. The research questions were:

Research question 1: What morphological processes regarding derivation, inflection and compounding play significant roles in vocabulary growth?

Research question 2: Does morphological instruction have positive impact on vocabulary growth for the first year university students?

The participants of the study were employed from the first year university students at a Chinese university. The research lasted 18 weeks, and 76 students participated in the experiment. Among them, 32 were male students and 44 female students with an average age of 19. All participants started to learn English from grade 1 at the primary school. By the time when they entered the university, they have been learning English for 12 years and they all passed the Na-

tional Matriculation Test. Their English proficiency could be considered as elementary level for English major students. Before they were admitted into university and took English as their major, they were exposed to English instruction with four 40-min English classes each week. According the requirement of the national curriculum, the participants developed some fundamental skills of reading, speaking, listening and writing. They acquired appropriate knowledge of pronunciation, vocabulary and grammar as designated by the national English curriculum. It was estimated that the participants' vocabulary size ranged from 3500 to 5000. The overall vocabulary number that the high school students occupied constituted a fundamental foundation for English learners to develop very limited communicative ability. But it seemed that such a number of vocabulary the participants had could not meet the requirement for English major students. Then it seemed that it was urgent enough for the first year students of English major to enlarge their vocabulary size as quickly as possible.

The experiment was carried out in the participants regular English classes. The students and the instructor met two times each week. When the experiment commenced, a pretest was organized for obtaining the general numbers of the vocabulary that the students had at the beginning of their first year at the university. At this stage Nation's vocabulary size test (2012) was adopted. In the experiment, the participants took around 30 minutes for the 100 item tests for the purpose of measuring the students' vocabulary knowledge without considering fluency, and so enough time was given to the participants to complete the test. The participants were even encouraged to ponder over the item provided (Nation, 2012). Therefore, the 14,000 test was employed when the experiment started. During the second stage of the study, a vocabulary test with 100 questions was applied to reinforce the morphological rules instructed. The vocabulary test was adopted and revised on the basis of vocabulary practice oriented to TEM 4 (an examination organized by the educational department nationwide for assessing English major students' English proficiency). By the end of the semester, altogether participants finished 8 vocabulary tests. At the third stage of the experiment, a post-test of vocabulary size was launched referring to Nation (2012) again. The results of the post-test were compared with the pretest for the purpose of figuring out whether the participants had made a progress of vocabulary learning so as to correspond to the research questions respectively. When the data were collected, all data were examined again to find out if they were all effective for the study because only effective ones could be processed and analyzed.

4. Results and discussion

Since the design of the longitudinal study is to find out if there is the relationship between delivering morphological rules and the growth of vocabulary throughout one semester, the focus of word-formation rules was laid on derivation, inflection and compounding instruction without referring to other morphological rules. Derivation, including zero derivation, inflection and compounding are very common ways to form new words and they can be considered as efficient ways to enlarge the vocabulary that the students need in their academic study.

The results showed that there was a significant difference between pretest and post-test in terms of vocabulary growth. In order to test the reliability of the difference in the pretest and posttest, Cronbach's Alpha was applied. It was 0.887 as shown in Table 1.

Table 1. The reliability of students' vocabulary size in the pretest and posttest

Reliability Statistics	
Cronbach's Alpha	N of Items
0.887	2

Through comparing the results in the pretest and posttest, it was clear that the discrepancy was caused by the realization of morphological awareness through instruction on morphemes when the instructor met the participants. The vocabulary tests following every two weeks reinforced the students' morphemic identification. On the basis of identifying morphological structure of the words, the students' vocabulary size increased rapidly by the end of the semester. In the pretest, the students' vocabulary size was about 4300 on average by applying Nation's (2012) vocabulary size test while their vocabulary size increased to 6500 on average in the posttest. Even though table 1 indicated the difference between the pretest and posttest reliable enough, it seemed that students' vocabulary size grew as they advanced in their learning only by referring to the reliable alpha could not provide convincing evidence to demonstrate the effect of morphological instruction on vocabulary learning, the descriptive statistics was employed. Table 2 demonstrated the result.

Table 2. Descriptive Statistics of the pretest and post test

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	76	32	59	43.97	5.776
Posttest	76	51	81	65.03	6.381
Valid N (listwise)	76				

In Table 2, all 76 participants' scores on the vocabulary size test in the pretest and posttest was processed. According to Nation (2012), the vocabulary size of the participants was gained by multiplying 100 in relation to the test score. The table here indicated that the minimum size of vocabulary that the learners possessed was 3,200 and the maximum size was 5,900 in the pretest. But in the posttest, the number increased to 5,100 and 8,100 respectively. The standard deviation was 5.776 in the pretest, and 6.381 in the posttest. Therefore, it was convincing enough to rely on the test to discuss the role and effectiveness of morphological instruction in terms of derivation including zero derivation, inflection and compounding respectively. The two research questions could be answered referring to the findings correspondingly.

Regarding research question 1, morphological processes such as derivation, inflection and compounding should play effective roles in vocabulary growth. Since the study was a longitudinal one, the samples were collected in ten lectures (N=10) and 2,890 instances were obtained. Among these instances, 1,880 were derivational (including zero derivation), 132 inflectional, and 878 compounding. The descriptive statistics in Table 3 showed the morphological processes on vocabulary learning. The standard deviation was 39.189 for derivation, 3.375 for inflection, and 23.771 for compounding. The standard deviation in the descriptive statistics was significant. It showed that the learners developed the morphological awareness and applied certain rules on word formation in their vocabulary learning.

Table 3. Descriptive statistics of morphological roles on vocabulary learning

	N	Minimum	Maximum	Mean	Std. Deviation
Derivation	10	120	257	188.00	39.189
Inflection	10	8	18	13.50	3.375
Compounding	10	55	137	87.80	23.771
Valid N (listwise)	10				

When the learners realized applying word-formation rules in vocabulary learning, derivation could be considered as one of the very efficient ways to form new words. Conversion was not treated separately but as one of the categories in derivation, i.e. zero derivation (Plag, 2003). In ten lectures of morphological instructions (N=10 in Table 3) on derivation including conversion (derivation without affixes), inflection, and compounding, derivational affixes did not cover all the cases. Some derivational affixes cause the change of word class while some others do not. Then they were treated separately by referring to Oz (2014). Only the common and regular ones were instructed. Appendix 1 listed the affixes instructed in ten lectures. For conversion, verbs converted in nouns and adjectives converted into nouns and verbs were collected. Compounding mainly covered nominal compounds, adjectival compounds, verbal compounds and neoclassical compounds (Plag, 2003). All eight inflectional morphemes in English were all referred to in the process of data collection. Appendix 2 listed all inflectional morphemes. The instances observed in the data showed that the participants developed the sense of applying the derivational rules (N=1880) more frequently than inflectional (N=132) and compounding (N=878). Compounding was employed more frequently than inflectional. The results indicated that the participants relied more on derivational and compounding realization to enlarge their vocabulary size. The participants could realize that it was an effective method to increase their number of vocabulary referring to derivational, conversional and compounding processes. In order to confirm the role of morphological instruction on the students' vocabulary increasing, a t-test was applied. Table 4 demonstrated the one-sample statistics and Table 5 was a one-sample test.

Table 4. t-Test One-sample statistics of derivation, inflection and compounding

	N	Mean	Std. Deviation	Std. Error Mean
Derivation	10	188.00	39.189	12.393
Inflection	10	13.50	3.375	1.067
Compounding	10	87.80	23.771	7.517

Table 5. t-Test One-sample test of derivation, inflection and compounding

	t	df	Significance		Test Value = 0		
			One-Sided P	Two-Sided P	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Derivation	15.170	9	<.001	<.001	188.000	159.97	216.03
Inflection	12.650	9	<.001	<.001	13.500	11.09	15.91
Compounding	11.680	9	<.001	<.001	87.800	70.80	104.80

In Table 4, standard deviation and standard error mean were significant associated with the morphological processes of derivation, inflection and compounding. The results indicated that instructions on derivation including conversion and compounding was more effective than inflection as the standard deviation and standard error mean and the interval difference in Table 4 and Table 5 were lower than the other two processes. Even though the occurrences of inflection were not so frequent as derivation and compounding, it was still effective to employ word-formation rule instruction to help learners of English increase their vocabulary size.

Since the findings of the experiment were meaningful for vocabulary learning, the results observed could shed light on the discussion of research question 2. In the study, the learners employed derivational processes more frequently than inflectional and compounding processes as the words learned through derivational process occurred more than the other two processes. The learners could refer to word-formation rules to enlarge their vocabulary size and improve their reading comprehension as well (Zhang & Koda, 2013). On the basis of Bae and Joshi (2017), derivation and compounding facilitated young Korean ESL learners reading comprehension because the learners accumulated more words by deriving and compounding. Thus, through analyzing the data, it could be drawn that morphological instruction had positive impact on the students' vocabulary growth. The data in the study demonstrated that there was a close relation between vocabulary growth and classroom instruction on word-formation rules. When the students were instructed with morphological rules, they realized that they did not need to learn vocabulary through traditional types of learning such as memorization, checking dictionary, spelling. But they could gain larger word use in their learning even though they had limited English proficiency at the first year of university (Wood & Schatschneider, 2021). Carlisle (2010) argued that "morphological awareness contributed to students' literacy development in all three areas—most notably when it deepens students' understanding of the morphemic structure, spelling, and meaning of written words" (p. 464). Crosson et al. (2019) delivered Latin roots to the students learning academic vocabulary. They proposed that when they instructed students Latin roots, "students could produce stronger outcomes for learning academic words by strengthening semantic and orthographic representations" (p. 689). And explicit instructions on morphemes could cultivate students' ability to analyze the structure of word and understand new words efficiently (Crosson et al., 2019). So it was significant that when the instructor guided the students to employ appropriate word-formation rules, the students found that their vocabulary accumulation was facilitated.

5. Implications for vocabulary teaching

On the basis of the findings of the longitudinal study carried out for the first-year university students, some implications for teaching vocabulary can be drawn from the results of the research. Firstly, teachers who teach English language learners in L2 contexts should develop the sense of utilizing morphological instruction inside and outside of the EFL or ESL classroom. It is very important for the language learners to grasp certain amount of words so that they can develop their language skills more effectively and efficiently. As it is known that the more words the learners know and produce, the better communication they can perform. This corresponds to the claims by Laufer and Goldstein (2004), Laufer and Nation (1999), and Nation (2012) that the larger size of vocabulary the learners possess, the more "considerable value in gaining knowledge about specific parts of language learners' proficiency" (Laufer & Nation, 1999, p. 33) can be realized. Although morphological rules can be complex and difficult to grasp, when the teachers employ appropriate methods to deliver them, the learners can still be benefited a lot from the teachers' instructions.

Secondly, morphological instruction motivates the learners' interest in to learning English words. As it is always the case that the learners think it is boring and dull to learn words of a foreign language, the learners usually do not have interest and motivation to learn words, especially difficult words. Through delivering some word-formation rules appropriately, the learners can realize that they do not need to refer to dictionary check and memorization, and they can understand and master words by themselves. This gives the learners opportunity to do more self study and increase the vocabulary size through their own realization. The effect of learning vocabulary by the learners' autonomy can be more fruitful and beneficial.

Finally, as morphological instruction promotes the learners' vocabulary growth advantageously, the teachers should put more effort into encouraging the learners to develop their own skills of word processing. When the learners have developed such a kind of ability, they can observe and analyze the structure of the words and build up their vocabulary more efficiently. This ability can help them do more successfully in their reading comprehension and writing as well (Kieffer & Lesaux, 2007; Zhang, 2016). Their linguistic performance can be improved accordingly in terms of fluency and accuracy.

6. Conclusion

The experiment designed in the study was to find out whether the first year university students could enlarge vocabulary size within one semester through morphological instruction. The findings in the study showed that when the students realized the derivational, inflectional and compounding processes of forming new words, they could develop the ability to increase vocabulary numbers efficiently. As compounding is a prominent feature of forming new words in Chinese, it should be beneficial for the English language learners in Chinese classrooms to develop compounding awareness in English effectively. Thus, the morphological instructions facilitated the burden of vocabulary learning for the learners.

The discussion of the results revealed that morphological instruction had positive impact on vocabulary gaining on the one hand. On the other hand, the results of the study suggested there was a direct link of instruction to vocabulary teaching. Referring to the significant influence on vocabulary growth through delivering morphology units, the teachers could rely on empirical findings and theoretical guidance to develop confidence in vocabulary teaching, particularly in the L2 contexts. The teachers could organize some activities in their teaching curriculum to cultivate the learners' awareness of morphology so that the learners accumulated their vocabulary numbers as quickly as possible and developed their language skills as well.

Although the study provided some suggestions for vocabulary learning and teaching, the limitation still existed and further study should not be ignored. It was obvious that the findings in the research benefited the development of the English learners' vocabulary growth, the results could not be generalized for all types of learners as the data were collected just through the first year university students. They were considered as adolescent learners and they could have high cognitive competence. Another issue raised in the research was that the samples obtained were not large enough. The data were collected through 76 participants' performance on the vocabulary practice. It did not cover all aspects of morphological processes. Then further study with large samples should be needed for the purpose of producing more convincing outcomes.

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Appendix

Appendix 1. Affixes instructed in ten lectures

	Instances	Word class
Suffixes	<i>-ful, -al, -ish, -ical</i>	Noun to adjective
	<i>-ance, -tion, -sion, -er, -ist</i>	Verb to noun
	<i>-ly</i>	Adjective to adverb
	<i>-fy, -ize (-ise)</i>	Noun to verb
	<i>-ness, -ity, -ism, -dom</i>	Adjective to noun
	<i>-able (-ible), -ive</i>	Verb to adjective
	<i>-ize (-ise), -en</i>	Adjective to verb
	<i>-ship, -ity, -dom</i>	Noun to noun
Prefixes	<i>-ish, -like,</i>	Adjective to adjective
	<i>dis-, ex-, auto-</i>	Noun to noun
	<i>un-, re-, dis-, auto-,</i>	Verb to verb
	<i>a-, il- (ir-), in-, un-, dis-, sub-</i>	Adjective to adjective

Appendix 2. Inflectional morphemes used in data collection

Morphemes	Function	Instances
<i>-s</i>	plural	girls, studies
<i>-s'</i>	possessive	Smith 's book, children 's toys
<i>-er</i>	comparative	shorter
<i>-est</i>	superlative	largest
<i>-s</i>	3 rd person singular present tense	She works in a company.
<i>-ed</i>	past tense	My brother played basketball.
<i>-ing</i>	progressive	She is learning French.
<i>-ed</i>	past participle	They have not decided yet.