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Novice Corpus Users' Gains and Views on Corpus-based Lexical Development: A Case Study of COVID-19-related Expressions

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Recently, corpus assisted vocabulary instruction has been attracting a lot of interest. Most studies have focused on understanding language learners' receptive vocabulary knowledge. Limited attention has been paid to learners' productive competence. To fill this gap, this study attended to learners' productive lexical development in terms of form, meaning and use respectively. This study introduced EFL learners to the corpus-based language pedagogy to learn COVID-19 theme-based vocabulary. To investigate the gains and views of 33 EFL first-year college students, a sentence completion task and a questionnaire were developed. Learners' productive performances in the three lexical knowledge aspects (i.e., form, meaning and use) were particularly targeted. The results revealed that the students achieved significant gains in all aspects regardless of their proficiency level. In particular, the less proficient students achieved greater knowledge retention compared with their highly proficient counterparts. Meanwhile, students showed positive attitudes towards the corpus-based approach to vocabulary learning.

Keywords: Corpus-based Lexical Development, Theme-based Vocabulary Learning, Lexical Knowledge, Guided Instruction, COVID-19

1. Introduction

Due to the outbreak of COVID-19, the occurrence of the coronavirus-centered terms and expressions peaked in the past few months. More and more vocabulary items that focus on the theme, such as "quarantine", "maintain social distancing", and "hoard food and supplies" have reached a new level of familiarity for many people. Nevertheless, mastering these expressions presents a new challenge to many language learners. It reflects the impact of the COVID-19 pandemic on language use.

Language learning is a process of learning explicit knowledge with awareness, which requires massive exposure to language data (McEnery & Xiao, 2011). However, for many EFL learners (e.g., in Taiwan), who seldom immerse themselves in the target language environment (Chen, 2019a), it is difficult for them to deliberately and continually expose to the target language as native speakers (Sinclair, 1991, 2004).

Corpus linguistics addresses learners' needs by maximizing the exposure to a great deal of authentic data in a structured way (McEnery & Xiao, 2011). Many empirical studies have demonstrated the effectiveness of corpus approach on second or foreign language education (McEnery & Xiao, 2011). Corpus assisted vocabulary instruction, one instructional focus, has also been discussed extensively in the literature. Numerous studies place greater focus on collocations or formulaic expressions. Nevertheless, learners' development of various kinds of lexical knowledge, such as form, meaning and use, have not been closely examined.

This study intended to address this gap by targeting learners' gains and retention in COVID-19 related expressions for two reasons. First, learning new vocabulary items focusing on a theme can

expand the meaning and use of the vocabulary (Cameron, 2001). On the other hand, the availability of the specialized corpus, the Coronavirus Corpus, (Mark Davies, 2020) can support the theme-based vocabulary learning. The objective of this research is three-fold: (1) to examine learners' development of lexical knowledge in terms of form, meaning and use; (2) to compared the performances of learners with different level of proficiency; and (3) to explore students' views on the corpus-based approach to vocabulary learning.

2. Background

2.1. Corpus-based Lexical Development

To master a word, language learners need to familiarize themselves with various kinds of vocabulary knowledge (Chen, 2019b; Schmitt, 1997) that involves recognizing its forms, knowing its meaning, knowing its specific grammatical properties as well as using the word appropriately (Nation, 2001). Note that the term "use" here is specified as "vocabulary practice rather than interactional communication" (Schmitt, 1997, p. 203).

In a language, the grammar and meaning emerge from use (Beckner et al., 2009). Such information can be acquired through corpus consultation. Corpus data allow language learners to engage with the content to explore language phenomenon, such as the form, variation, meaning, frequency, grammar patterns, collocations of the queried lexical items (Boulton, 2017; Chen, Huang, Huang, Chang, & Liou, 2014; Godwin-Jones, 2017).

Through analyzing recurrent patterns of real language (O'Donoghue & Jung, 2013), this discovery learning, commonly known as data-driven learning (DDL) (Johns, 1991), not only benefits learners' language knowledge but also leads to the development of general cognitive skills such as noticing (Schmidt, 1990), exploring, thinking, reasoning, analyzing, and interpreting (O'Sullivan, 2007).

Recently, researchers have shown an increased interest in corpus assisted vocabulary instruction (Boulton, 2012). Some studies have great interest in EAP vocabulary learning (e.g., Horst, Cobb & Nicolae, 2005; Kaur & Hegelheimer, 2005) whereas some the learning of general vocabulary mostly from the textbooks (e.g., Kazaz, 2020; O'Donoghue & Jung, 2013; Tekin & Soruç, 2016). The central focus of the studies has been placed on learners' receptive vocabulary knowledge (Horst et al., 2005; Kaur & Hegelheimer, 2005; Kazaz, 2020; Tekin & Soruç, 2016). Limited attention has been paid to learners' productive competence. To fill this gap, this study attended to learners' productive lexical development in terms of form, meaning and use respectively.

2.2. Guided Instruction

Guided instruction, typically used in the area of general language teaching, has been recently adopted for corpus-based language learning (e.g., Flowerdew, 2009, 2015; Mizumoto, Chujo, & Yokota, 2016; Yoon & Jo, 2014). Carter and McCarthy (1995) propose the 'triple I' (Illustration-Interaction-Induction) model (Vyatkina, 2016) to realize the goal of guided instruction that places the learners at the center of the learning task. Utilizing structured and scaffolded activities (Smart, 2014), the instructor guide learners through the language discovery process. Learners examine the authentic data (illustration), discuss and share their opinions and observations with their partners (interaction), and making their own rules for particular linguistic features (induction). This guided inductive approach substantiates teacher and peer scaffolding and collaborative learning (Flowerdew, 2015).

The current study adopted this explicit teaching paradigm to guide the students to "interacting with authentic language" (Boulton, 2012, p. 280) as well as to draw students' attention to salient linguistic features to expand their lexical knowledge. The pedagogical practice is detailed in the Experimental procedure section.

2.3. Research Questions

This study attempted to investigate the novice corpus users' gains and views on corpus assisted vocabulary learning. The retention of different students was also examined. To this end, three research questions were asked.

1. Do learners achieve gains in the lexical knowledge in terms of form, meaning, and use?
2. Do learners' performances differ in terms of the level of proficiency?
3. What are the learners' perceptions of the corpus-based lexical development?

3. Methods

3.1. Participants

A non-experimental pre- and post-test design was adopted to address the issue under investigation. The study recruited 33 first-year students in two classes, including 5 males and 28 females. They enrolled in a freshmen English course at a university in Taiwan. This course met two hours per week for 18 weeks in the semester. Prior to the course, the students had received formal English instruction for six years during their junior and senior high school years and had no experience studying or living abroad.

They were estimated to be at the intermediate level based on their performance on a proficiency test (Chen & Lin, 2011), equivalent to CEFR-B1 Level, which was conducted at the beginning of the semester. The two classes were demonstrated homogeneous according to the result of a Levene's test ($F(2, 31) = 0.006$, p value =0.936).

3.2. Instrument

This study was carried out adopting the Coronavirus corpus, first released in May 2020 (Davies, 2020). The corpus collects written texts from online newspapers and magazines in 20 different English-speaking countries. It still grows by 3-4 million words per day. The Coronavirus corpus allows users to look at the frequency, the collocates and the patterns of words and phrases. Such up-to-date and authentic linguistic data provides language learners with great insight into form, meaning and use of COVID-19-related expressions.

3.3. Materials

Three materials were employed for collecting quantitative and qualitative data: (1) a sentence-completion task used in the pre-, post-test and delayed post-tests, (2) four weekly worksheets, and (3) an evaluation questionnaire. Each of these is described below.

The sentence-completion test. The sentence-completion format was adopted in this study because it could draw on students' productive performance in the aspects of form, meaning and use (Brown & Abeywickrama, 2019; Chen et al., 2014). The target keywords were carefully selected from the press releases of Taiwan Center for Disease Control on COVID-19 (https://www.cdc.gov.tw/En) issued daily from March to May, 2020 because the format was fairly consistent for the daily report. The words or phrases selected had to contain the information of form, meaning and use (e.g., the expressions "be placed under a 14-day quarantine" and "be placed in isolation"). Based on this rationale, a total of 20 keywords were selected to design the test items.

The sentences used to develop the tests were adapted from CNN or BBC news articles. The length of each sentence was no more than 25 words to reduce the students' cognitive load. After being piloted,

12 keywords were decided as the test items of both pre-test and post-test. The delayed post-test adopted the version of the pre-test except the order. The format of the test items is a sentence with its corresponding translation, which avoided obscurity and ambiguity of the expressions. The form of the test item is as follows:

Chinese: 所有從國外回到澳洲的本國人都要強制隔離14天。
English: All Australians returning from overseas were placed _____.

As shown in the example, each blank entailed filling in one to six more missing words, aiming at examining students' command of the aspects of form, meaning and use.

Note that the sentences in the pre-test and the post-test were different for the purpose of minimizing the effect of short-term memory. Moreover, the 12 keywords in the pre-and post-tests were placed in different order.

Scoring criteria. A 3-point grading scale ranging from 0 to 2 was adopted to determine students' performance in the individual aspects of lexical knowledge (i.e., form, meaning and use). For each aspect, the student would be awarded 2 points if he provided correct or acceptable answers. He would receive 1 point if his answers with minor errors. Otherwise, he received 0 points if he failed to provide any correct answers. That is, each blank was worth six points. The full marks for the whole test were 72.00.

Weekly worksheets. The above-mentioned 12 keywords were used as four-week outside of class activities. Each worksheet contained two to four queries. Students were required to note down the search process along with five instances with patterns of usage that they thought were worth learning.

Evaluation questionnaire. The questionnaire consisted of close-ended and open-ended questions. The former part consisted of ten questions for eliciting students' views on corpus consultation (item 1-3), the guided instructions (item 4-7), and the gains of the specific aspects of lexical knowledge (item 8-10). Each item was measured in the form of a four-point Likert scale, with 1 representing "strongly disagree" and 4 representing "strongly agree". The Cronbach's alpha reliability coefficient for the questionnaire was .727, indicating that the self-developed questionnaire had acceptable internal consistency. In addition, eight open-ended questions were asked to better understand the reasons underlying the students' answers to the closed-form question.

3.4. Experimental Procedure

The pedagogical procedure of the current study lasted for six weeks.

The pre-test was administered in the first week, aiming at identifying learners' strengths and weaknesses in the use of COVID-19 related expressions.

In the second week, the students were introduced to the four functions of the Coronavirus Corpus: List, keyword in context (KWIC), lexical and grammatical collocations. A handout with four example queries was distributed for facilitating students' corpus consultation literacy.

During the treatment phase (Week 2-5), the 'triple I' model was introduced. First, students consulted the corpus, scrutinized the concordance lines to search the possible collocates or phraseological expressions, and noted down five instances with linguistic patterns. The students were encouraged to read the extended context of the queries to explore more linguistic features or expressions (i.e., the **illustration** and **induction** stages). Afterwards, students discussed their observations with their peers (working in groups of three or four) and decided three most useful instances. Furthermore, in each subsequent week, the students shared their group work with the whole class (i.e., the **induction** and **interaction** stages) using slides. The researcher joined the class discussion and clarified the points or provided additional examples if needed.

In Week 6, all the students were given a post-test and an evaluation questionnaire. One month later, the delayed post-test was conducted.

4. Research Findings

To understand the effect of corpus pedagogy on EFL learners' lexical development, students' gains and their retention in all three aspects were examined (research question 1). The performances of different students were further analyzed and compared (research question 2). Moreover, students' views on corpus-based lexical development were elicited (research question 3).

4.1. Student Gains in Lexical Knowledge

To investigate student gains and retention, comparisons were made to see if there were significant differences between (1) total scores of the pre-test and the post-test and (2) total scores of the post-test and the delayed post-test.

First, as shown in the first row in Table 1, students' total scores of the post-test (M = 37.79, SD = 11.19) was significantly higher than the pre-test (M = 16.48, SD = 7.69) (t = 14.16, p value < .001). Their scores of the delayed post-test (M = 39.73, SD = 8.74) were even higher compared with the post-test, although no significant difference was found (t = 1.45, p value = 0.16). Students' performance in the individual aspects exhibited a similar trend (Table 1).

Table 1. Students' Improvements and Retention in the Three Aspects

	Pre-test Mean (SD)	Post-test Mean (SD)	Delayed post-test Mean (SD)	Pre-test vs. Post-test t (p value)	Post-test vs. Delayed post-test t (p value)
ALL	16.48 (7.69)	37.79 (11.19)	39.73 (8.74)	14.163* (<.001)	1.451 (0.156)
Form	5.12 (2.77)	12.30 (3.44)	13.30 (2.90)	16.891* (<.001)	2.023 (0.051)
Meaning	4.24 (2.63)	12.42 (4.16)	12.42 (3.33)	12.868* (<.001)	0.000 (1.000)
Use	7.12 (2.71)	13.06 (3.88)	14.00 (2.94)	10.595* (<.001)	1.908 (0.065)

Note. N = 33. Total full marks = 72.00. Full marks for individual aspects (form, meaning, use) = 24.00. *p <.05.

Next, to further investigate whether an aspect outperformed the other two, the multiple comparisons were performed on the improved scores for each of the two groups (Table 2). For example, the score difference between form and meaning is 0.99 (i.e., 8.18-7.19). As can be seen in the multiple comparisons columns, **use** showed significant mean differences compared with **meaning** (p value = 0.01) whereas no significant performance differences existed between **form** and **meaning** (p value = 0.196) and between **form** and **use** (p value = 0.082). The effect sizes ranging from 0.21 to 0.38 suggested small to medium differences (Cohen, 1988).

Despite no significant differences existed among the improvements of the three aspects of lexical knowledge, **use** scored somewhat lower. It is likely that the queried words with many patterns of usage would be difficult for learners (Todd, 2001).

Table 2. Further Comparison of Students' Improvements

Group	Pre-test	Improved scores	Multiple comparisons		Effect size (Cohen's d)	
	Mean (SD)	Mean (SD)	Form	Meaning	Form	Meaning
Form	5.12 (2.77)	7.19 (2.98)	-	-	-	-
Meaning	4.24 (2.63)	8.18 (6.67)	0.99	-	-0.21	-
Use	7.12 (2.71)	5.94 (5.19)	-1.25	-2.24*	0.31	0.38

Note. N = 33. Total full marks = 72.00. Full marks for individual aspects (form, meaning, use) = 24.00. *p <.05.

The overall and the individual scores revealed that that students' knowledge of COVID-19-related expressions increased significantly. Importantly, the acquired vocabulary knowledge did not dwindle. Instead, a slight increase was seen, indicating that students' lexical knowledge was well retained. Therefore, the answer to research question one is that the triple I guide instruction not only enhanced students' lexical development but also enabled the retention.

4.2. Performance of Students with Different Proficient Levels

The second research question took a closer look at the performance of different students. Thus, the students were divided into two groups based on their scores of the proficiency test (Chen & Lin, 2011), which was conducted in the first week of the semester. A total of 14 students scored above or equal to the grand average (58.4), so they were classified as highly proficient. The other 19 participants with below-average scores were classified as less proficient. The average scores of the highly and less proficient groups were 67.86 and 51.16 out of 100.00 respectively. Both within–group differences and between–group differences were investigated.

The performances of the individual groups were first examined. As seen in the first panel of Table 3, the highly proficient students' scores of the pre-test (M = 17.50, SD = 6.31) and the post-test (M = 41.36, SD = 10.57) were significantly different (t = 11.283, p value < 0.001) whereas no significant difference (t = -.525, p value < 0.608) was seen between the post-test and the delayed post-test (M = 40.14, SD = 8.66). The performance in the three aspects produced similar results. The findings indicated that the highly proficient students showed marked achievement and good retention in the task.

Similarly, the less proficient students demonstrated significant improvements in all three aspects (the second panel of Table 3). More importantly, unlike their counterparts, the less proficient students showed further increases in the delayed post-test except in the **meaning** aspect. It can be inferred that the less proficient students had better retention of the lexical knowledge they learned.

Table 3. Within Group Comparison

		Pre-test Mean (SD)	Post-test Mean (SD)	Delayed Post-test Mean (SD)	Pre-test vs. Post-test t (p value)	Post-test vs. Delayed Post-test t (p value)
Highly	ALL	17.50 (6.31)	41.36 (10.57)	40.14 (8.66)	11.283* (<.001)	-0.525 (0.608)
	Form	5.57 (2.14)	12.93 (3.50)	12.93 (3.56)	12.898* (<.001)	0.483 (0.637)
	Meaning	4.43 (2.17)	13.93 (3.56)	12.64 (3.27)	13.254* (<.001)	-1.678 (0.117)
	Use	7.50 (2.44)	14.50 (3.82)	14.14 (2.66)	7.711* (<.001)	-0.438 (0.669)
Less	ALL	15.74 (8.67)	35.16 (11.17)	39.42 (9.02)	9.542* (.001)	3.042* (0.007)
	Form	4.79 (3.17)	11.84 (3.42)	13.26 (2.85)	11.398* (<.001)	2.545* (0.020)
	Meaning	4.11 (2.98)	11.32 (4.31)	12.26 (3.45)	67.815* (<.001)	1.901 (0.073)
	Use	6.84 (2.93)	12.00 (3.67)	13.90 (3.20)	7.673* (<.001)	3.618* (0.002)

Note. Highly proficient students (n= 14) and less proficient students (n= 19). Total full marks = 72.00. Full marks for individual aspects (form, meaning, use) = 24.00. *p <.05.

Next, the performances of the highly and less proficient students were compared (Table 4). As seen in the overall scores, no significant difference (t = 0.645, p value = 0.524) existed between the pre-test scores of highly proficient students (M = 17.50, SD = 6.31) and the less proficient ones (M = 15.74, SD = 8.67). It means that the lexical knowledge both groups possessed did not differ before the treatment. After the treatment, both groups made substantial progress. The improved scores of both groups also

showed no significant difference (t = 1.485, p value = 0.148). Likewise, the scores in the three aspects yielded similar results.

Table 4. Between Group Comparison

		Pre-test Mean (SD)	t (p value)	Improved score Mean (SD)	t (p value)
All	Highly	17.50 (6.31)	0.645 (0.524)	23.86 (7.91)	1.485 (0.148)
	Less	15.74 (8.67)		19.42 (8.87)	
Form	Highly	5.57 (2.14)	0.797 (0.432)	7.36 (2.13)	0.349 (0.729)
	Less	4.79 (3.17)		7.05 (2.70)	
Meaning	Highly	4.43 (2.17)	0.000 (1.000)	9.50 (2.68)	1.845 (0.075)
	Less	4.11 (2.98)		7.21 (4.02)	
Use	Highly	7.50 (2.44)	0.683 (0.500)	7.00 (3.40)	1.669 (0.105)
	Less	6.84 (2.93)		5.16 (2.93)	

Note. Highly proficient students (n= 14) and less proficient students (n= 19). Total full marks = 72.00. Full marks for individual aspects (form, meaning, use) = 24.00. *p <.05.

Taken Table 3 and Table 4 together, the COVID-19 related expressions challenged both groups in the first place. After the treatment, the students achieved substantial gains in form, meaning and use regardless of their proficiency level. It indicated all the students benefitted from the corpus pedagogy. Regarding the retention, the less proficient students showed better performance compared with the highly proficient students. In fact, the highly proficient students did not show much regression. It can be inferred that the less proficient students raised greater awareness of lexical knowledge in the task, which echoed the findings in Vyatkina (2016) that the guided induction was successful in working with students at a low proficiency level.

4.3. Students' Perception of the Corpus-based Lexical Development

To answer this research question, a ten-item reflection questionnaire was designed to explore student viewpoints towards the experience consulting corpora (item 1-3) and the guided instructions (item 4-7), and the gains of the specific aspects of lexical knowledge (item 8-10). Moreover, to have a clearer grasp of how and why the students thought, eight open-ended questions were asked (seven for item 1-7 and one for item 8-10). Students were encouraged to provide detailed comments. A two-sample t test was carried out on the responses of different students and the results showed no significant difference between the two groups (Table 5). Learners' perceptions on each survey question were discussed below.

Table 5. Students' Views on Corpus Experience, the Guided Instruction and Their Lexical Development

	No.	Items	ALL (33)	Highly (14)	Less (19)	t (p value)
			Mean (SD)	Mean (SD)	Mean (SD)	
Corpus Consultation Experience	1	I am satisfied with the information existing dictionaries provides	2.97 (1.05)	2.93 (1.14)	3.21 (0.63)	0.908 (0.371)
	2	My first time to consult corpora	3.70 (0.27)	3.93 (0.27)	3.95 (0.23)	0.217 (0.830)
	3	Consulting corpora is time-consuming	3.58 (0.90)	3.86 (0.36)	3.68 (0.58)	0.978 (0.336)
The Guided Instructions	4	Examining the corpus data	3.12 (0.90)	3.36 (0.63)	3.21 (0.63)	0.659 (0.515)
	5	Discovering and noting down rules for a particular feature	3.36 (0.95)	3.50 (0.76)	3.58 (0.61)	0.332 (0.742)
	6	Discussing the material with other students	3.26 (0.97)	3.64 (0.50)	3.32 (0.89)	1.242 (0.223)
	7	Sharing observations and opinions with other students	3.20 (0.97)	3.57 (0.76)	3.16 (0.76)	1.543 (0.133)

Gains of Lexical Knowledge	8	Form	2.28 (0.77)	2.50 (0.76)	2.26 (0.65)	-1.031 (0.310)
	9	Meaning	3.31 (0.50)	3.64 (0.50)	3.42 (0.51)	-1.252 (0.22)
	10	Use	3.45 (0.93)	3.71 (0.47)	3.58 (0.61)	-0.695 (0.493)

Note. out of a total of 4.0. N=33. *p <.05.

The first panel illustrates students' attitudes towards the existing dictionaries (item 1) and corpora (item 2 and 3). The scores of item 1 were not very high, indicating that dictionary consultation was not always satisfying. The students were further asked about the information they needed from the dictionaries. The responses of 28 students provided (11 highly and 14 less proficient students) were annotated. The **use** aspect (including collocations, phrases, example sentences) was highly demanded (all students: 64.3%, highly proficient students: 54.5%, less proficient students: 70.6%). It was followed by the **meaning** aspect (including clearer explanation about the query words and/or their synonyms) (all students: 46.4%, highly proficient students: 36.4%, and less proficient students: 52.9%). There was far less demand for the **form** aspect, including parts of speech, singular and plural forms (all students: 3.6%, highly proficient students: 0.0%, and less proficient students: 5.9%). Note that because some students provided more than one answer to this question, the number of the responses was not the same as the number of the students. It was not surprising that less proficient students expressed a stronger demand, which reflected their needs to be engaged in language learning.

For all students, this was the first time to access a corpus (item 2). When being asked about the difference between dictionaries and corpora, they appreciated the very large number of authentic example sentences the corpus provided. However, the shortage of explanation of lexical meanings, some difficult examples and the unorganized information were the obvious downsides of corpus consultation. Therefore, both highly and less proficient students agreed that consulting corpora was highly time-consuming (item 3). Students' responses were in line with those of previous studies (e.g., Tekin et al., 2016a; Yeh, Liou, & Li, 2007). The length of corpus consultation per query varied from 5 to 60 minutes with an average length of 31.45 minutes. On average, the time the highly and less proficient students spent were 30.38 and 32.29 minutes, suggesting no significant difference (t = 0.289, p value = 0.774).

The second panel including four questions asked about the effects of the guided instruction. Overall, both highly and less proficient students held positive attitudes towards the 'triple I' approach. ANOVA did not show a significant difference among these three individual stages (F =0.981, p value = 0.404). The findings corresponded to those of the previous studies (Vyatkina, 2016).

Among the individual stages of the guided instruction, the **illustration** stage seemed quite daunting (item 4). Ten students (four highly and six less proficient) indicated that the large number of instances were too overwhelming to digest. It was laborious to examine the corpus data, which would exhaust their patience. The results were in concert with those in previous studies (Chambers, 2005; Yeh et al., 2007). Meanwhile, most students appreciated the **induction** stage (item 5) except only one less proficient student. For her, it was an assignment. Other students appreciated the process of discovering and noting down the rules or patterns of the query words.

Likewise, most students responded with a positive attitude towards the **interaction** stage. The step of discussing their findings with their peers facilitated better recall (item 6). At the same time, other students' sharing allowed them to expand their lexical knowledge (item 7). Yet, one highly and two less proficient students confessed that it was not easy to stay focus while listening to others' observations especially when the shared information overlapped with theirs.

It is worth mentioning that three less proficient students valued the teacher's comments. It could be reasonably inferred that students needed more guidance to clarify the language use. Such feedback echoed previous studies (Smart, 2014; Vyatkina, 2016). Researchers (e.g., Vyatkina, 2016) suggest that

intervention provide scaffolding in building students' corpus consultation literacy.

The third panel shows students' perceptions of their gains of lexical knowledge (item 8 to 10). ALL the students claimed that they gained more the aspects of **meaning** and **use** via the corpus consultation. Seven highly and 13 less proficient students said that they did not focus particular attention on word forms, which corresponded to item 1, in which students' demand on the information related to **form** was very low. Despite the discrepancy between students' views and their gains (in the first research question), word form and use were definitely two significant difficulties (Chen, 2019a). Researchers (e.g., Nation, 2001; Schmitt, 2008) suggest that word form and constraints on use be explicitly taught and consciously learned, aimed at raise students' awareness.

5. Conclusions

This study set out to explore the effectiveness of corpus pedagogy on EFL learners' lexical developments in terms of form, meaning and use. Students were guided to learn COVID-19 theme-based vocabulary with a specialized corpus, the Coronavirus Corpus. The evaluation results of the sentence-completion tests indicated that all the students substantially gained the lexical knowledge from the corpus pedagogy regardless of their proficiency level, whereas the less proficient students showed better knowledge retention than their counterparts. In the meantime, the students appreciated the corpus approach to vocabulary development.

This paper expanded our understanding of the guided inductive approach to the lexical development. Yet the students' improvement on word use was not as significant as the other two aspects (i.e., meaning and form). Obviously, word use has been always demanding that deserves explicit instruction. In pedagogical practice, instructors could assign sentence making tasks to the students in order to help students gain a good command of word order, word form and sentence structure.

While an encouraging outcome was obtained, more work will need to be done to further understand learners' learning difficulties and needs. For example, the number of the test items could be increased and a more heterogeneous group of novice corpus users could be included. In addition, further investigation into learners' errors in word use and word form would be worthwhile. Last but not least, the issue that how many instances would maximize the learning effectiveness may also be worth exploring in future work.

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