Enhancing Self-Error Correction in English Writing of Thai Undergraduate Students through Online Concordances and Correction Symbols

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Abstract

The objectives of this research were 1) to develop students' self-error correction in English writing by using online concordances and correction symbols; 2) to investigate the grammatical errors that were corrected after using the online concordances and correction symbols; and 3) to explore the students' satisfactions towards using the online concordances and correction symbols in self-directed learning. The research design was one group pretest and posttest. The sample group was 35 second-year students majoring in English for Communication, Faculty of Liberal Arts at Rajamangala University of Technology Thanyaburi. All the 35 students were studying the course of English Structure for Writing Development. Convenient sampling was employed in this research. Also, the students were divided into three groups of English language competency including above average, average and below average. The students were assigned to write three types of writing: narrative, descriptive and comparison-contrast. There were three raters checking through holistic assessment and grammatical errors were categorized at word level. The research instruments were an online concordance of *Lextutor*, correction symbols, pretest and posttest, grammatical error-correction tasks, questionnaire (5-point rating scale) and in-depth interview. The statistics used in this research were percentage, mean, standard deviation, and the correlation coefficients among three raters. The results revealed that in three types of writing the correlation coefficients

among three raters are high with statistical significance at the level of .05. The average of posttest scores was significantly higher than pretest scores at the level of .05. The students' attitude for self-directed learning through using an online concordance line in English writing was at a high level. The posttest score was higher than the pretest score at .05 statistical significance level and perceived the corpus approach as beneficial to the development of their English writing skills.

Keywords: L2 writing; Correction symbols; Online concordances; Self-error correction; Thai Undergraduate students

Introduction

With the advancement of information technology, Internet is easily accessible, and networks are also extensively used in English language teaching. Also, *corpora* (a 'corpus' – in the singular – a collection of texts input into a computer used for the study of language) and concordances are available easily for language teachers to use through CD-ROMs and online websites which are free or commercially available. Corpus has been widely applied for linguistic research and L2 classroom pedagogy for decades since 1980s (O'Sullivan & Chambers, 2006). By connecting to a database of corpus and typing a word or a set of words known as a KWIC (keywords-in-contexts), the key word is positioned in the middle with words of the context on either side appearing one single line of context, known as "concordance". The concordance program provides a series of concordances collecting examples which are authentic contexts of a target language from various sources. The examples concordances of the keyword "familiar" are shown in Figure 1 below.

on is in the exploration of the human body. Our readers **are** FAMILIAR with the principles of sonar wh

deadlines, tends naturally to assume that others must be **as** FAMILIAR with a problem as he is. The nee

r neighbors to discover. So much for the tiresome facts, **as** FAMILIAR to you, I'm sure, as to the const

the operator **f. Now **f **f so **f. The reader should **be** FAMILIAR enough with projections by no

nd the dreadful Lake of Fire. So, walking in awe, he **became** FAMILIAR with God, who resided chiefl

ding one's purchases over several wine dealers, one **becomes** FAMILIAR with the names and specialtie

rst attacks the actual problem of reading, he is **completely** FAMILIAR and at ease with all of the eleme

d's songs usually do, but his lyrics have a tired, **cut–to–a–** FAMILIAR– pattern quality. Elaine Stritch,

s if you could get a shock from them. It was a **disturbingly** FAMILIAR face, too, but I couldn't remem

he heard it and smelled it the steady hissing, the **dread,** FAMILIAR pungency of gas escaping. It mu

yping and clerking positions. All applicants were **generally** FAMILIAR with the work of the receptionis

Fig.1 Concordances of the keyword "familiar" used as an adjective to correct "familiar" as a verb

Source: www.lextutor.ca

The data above is known as "concordance lines". Students can study these lines and closely see how a keyword operates in context among related words. Students can examine from the left, right, top, and bottom sides of the keyword to find patterns of how the keyword is used in the target language. The use of corpora and concordances is advantageous because it provides meaningful input and encourages students to discover language use on their own. Students can study these concordances closely and see how a keyword operates when appearing with words surrounded (self–directed learning). This makes students eager to develop linguistic resources which are essential for effective writing since they have sufficient examples to look through. Tribble and Jones (1990) mention that the corpus approach connects form and function in the teaching of writing since it not only raises learners' language awareness, but also contributes to and understanding of functions of linguistic features in context. It means each student takes the role of investigator from the examples appearing through concordances and then determines the rules of language by themselves. It is an alternative way to facilitate writing. Moreover, using correction symbols as feedback for students is the other method applied in this study. After studying correction symbols given by the teacher, the students learn from the mistakes they made and then write the sentences by themselves through various examples provided by the concordance lines. In this paper, the use of web–based concordance lines, together with correction symbols are examined for their effects on students' self–directed learning process in their writing and attitudes.

With the mentioned applications of concordances and correction symbols, this paper, therefore, aims to investigating the effectiveness of integrating concordances and correction symbols in enhancing self-error correction of Thai undergraduate students' English writing tasks.

Research Objectives

1. To develop students' self-error correction in English writing by using an online concordance lines and correction symbols.

2. To investigate the grammatical errors that were corrected before and after using the online concordance lines and correction symbols.

3. To explore the students' satisfactions towards using the online concordance lines and correction symbols in self-directed learning.

Research Questions

1. Do the online concordances and correction symbols enhance the students' self-directed learning in English writing?

2. What were the grammatical errors corrected before and after using the online concordances and correction symbols?

3. What are the students' satisfactions towards using the online concordances and correction symbols in self-directed learning?

Literature Review

Self-error correction in writing

Self-error correction defines as the ability of students to correct their own errors. Many students prefer direct feedback from their teachers; however, self-directed learning is essential for teachers to use to push them to reach the goal of life-long learning. Giving indirect feedback is one of the effective ways for students to self-revise their work. Self-directed learning is the perception of information related to lifelong learning which contributes to sustainable learning for learners and also meets their needs and differences of each one. The teacher' role is not just teaching or lecturing in class as in the past, but learning environment is different and this helps learners to learn the language more effectively. This kind of learning encourages learners to seek knowledge by themselves. The new knowledge theory is related to the intellectual development of

Piaget (Cognitive Theory) stating that learning is based on discovery and experience occurring because learners have built up the knowledge and then adjusted it with the existing knowledge. Therefore, developing learners through self-directed learning provides the opportunity for them to learn and construct their own knowledge which is necessary for them to improve their language skills. If they are trained to be familiar with rule discovery, it can enhance their learning autonomy and also self-reliance in the future.

For Thai students who learn English as a foreign language, English writing is a hard skill and teachers are required to help them develop their writing proficiency. Editing errors is viewed as an essential process in English writing. The literature reviewed on self-directed learning and related studies is as follows.

There have been several studies supporting the use of self-directed learning or self-discovery of grammatical rules for learners, such as the studies of Chandler (2003), Lee (2004), Prince and Felder (2006), Onodera (2007), and Shih (2008). For using concordances, Gaskell and Cobb (2004) conducted a study to discover how lower intermediate L2 writers coped with using concordances to self-revise their own writing. The results showed their writing skills had improved; however, there was no decrease in the number of errors. This was probably because the errors were so complicated. Similarly, Yoon and Hirvela (2004) investigated the ability of intermediate and advanced ESL students dealing with concordances and attitudes on using them. The study revealed that the students had positive feeling on concordances, and they gained more confidence in their writing since they used cognitive skills in working with them. In 2013, Mull did a longitudinal study of four learners using concordances to peer edit their writings. The students also used screencasts and other techniques like audio recording. The results indicated a highly detailed account of how students responded to a concordance and corrected errors. Parise (2013) did a research study on the use of concordances in EFL/ESL writing instruction for Japanese teachers of English in junior high and high school by making use of concordance data for the learners to reflect on their errors and self-edit as feedback. The results indicated that a concordance can be used as a fruitful resource because it allows the fact of actual language to be observed in writing, but the learners should be given closer guidance how to use a concordance program since they had never seen it before and would not know where to start. In contrast to Feng (2014), the participants in the study had a positive attitude on corpus concordance in writing and self-error-correction. They used corpus concordance for ESL learner self-error correction in

writings and attitudes. The findings showed that the students had a certain pattern to revise errors with dictionaries and corpora. They could also make corrections to word choice in writing.

In Thailand, there were not many studies conducted on the use of concordances for self-directed learning. Todd (2001) did a study via the use of inductive learning with postgraduate students. The results showed that there was a strong correlation between the ability to induce patterns and the ability to self-directed learning. He also suggested for further studies that teachers should give guidance to learners with simple and clear steps of using the program, together with concordance exercises to practice so that they were familiar with the program before coping with it by themselves. In 2003, Sripicharn evaluated classroom concordancing on the use of concordance-based materials by a group of Thai students. The findings supported teachers' feedback, in conjunction with a concordance, which can help inductive learning since students can discover rules from the concordance and then develop their language awareness. For Tasanameelarp (2009), the results from using concordances on EFL learners' ability to self-revise grammatical errors for low-proficiency EFL learners supported the emphasis on the tasks assigned for the learners. They should be designed appropriately for low level of language proficiency by offering simple language patterns in the form of printouts and also sufficient practices to overcome the problems occurring. Importantly, the learners should be informed about the benefits of independent learning through concordances.

Corpus concordances as an inductive approach

Since computer technology plays an important role in people in the 21st century, it allows people to learn and get the information rapidly. Similarly, to study the language, computer technology is used as a tool to develop learners. The use of technology in teaching is a new phenomenon in learning since they can learn things by themselves with the help of technology. The corpus (corpora as a plural form) was invented in 1969 and has been used for English language instruction for decades (O'sullivan & Chambers, 2006). By providing learners with authentic language, this can help them discover the knowledge by themselves. The technology tool like corpus concordancing that they consult should provide correct, clear, and sufficient information for them to acquire the linguistic knowledge independently to construct their own knowledge. The method for grammar learning by observing pattern rules from various examples and then generalizing those rules by themselves is known as inductive approach. By applying the inductive method, students are more active in the learning process rather than being passive learners. It involves discovery techniques during the acquisition process and exploits authentic

material in which the focus is on usage rather than rules. Also, the inductive activity fosters learners in constructing their own knowledge to apply in their own contexts. The teacher's role is as a facilitator to guide them in discovery and then to provide more opportunities to practice.

Using correction symbols as teaching feedback

Correction symbols mean the indication of types and locations of students' mistakes through the use of correction codes. Using correction codes, for teachers, can be recognized as a convenient way of giving learners information on what they have done incorrectly and according to Ferdouse (2012), using correction symbols provide students a system of signals to help them realize what they are looking for before they have acquired much proof-reading skill. In addition to this, this technique also encourages students aware what the mistake is, so that they can correct by themselves (Hyland, 2003). Importantly, correction symbols allow students to consider writing as a skill that can be developed and to visualize the areas of improvement (Hedge, 2000).

With this respect, using correction symbols can facilitate students' self-learning and provide them positive attitudes towards the process of English writing. Teachers therefore should this system in giving feedbacks for the positive outcomes.

Conceptual Framework

This research employs a mixed method approach to investigate the effectiveness of the use of online concordances and correction symbols of the process of self-error correction in English writing. The researcher defines the research conceptual framework based on the concept of self-error correction together with the use of online concordances and correction symbols. The details are as follows.
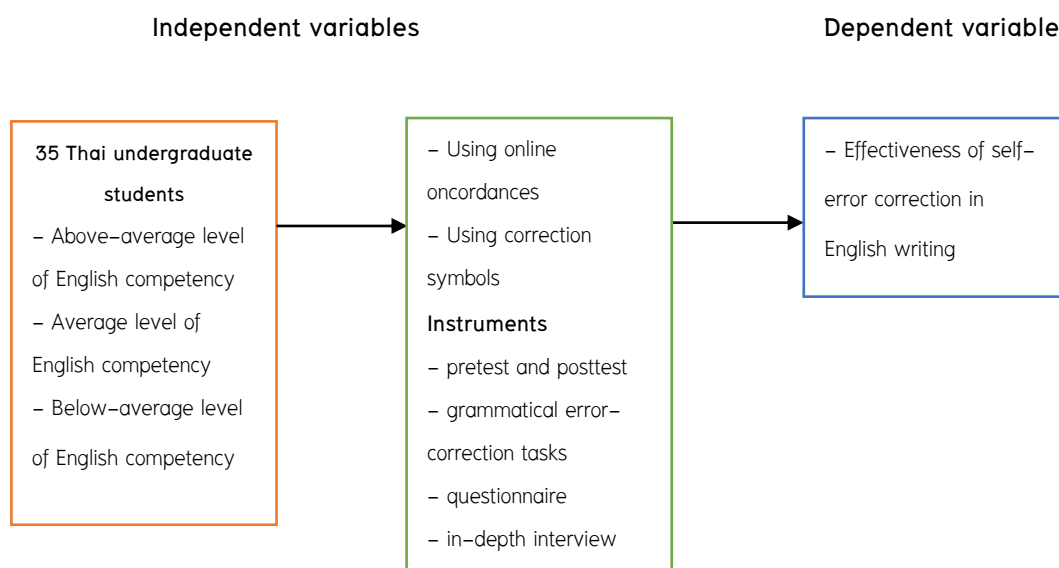
Independent variables   **Dependent variable**

| 35 Thai undergraduate students
– Above-average level of English competency
– Average level of English competency
– Below-average level of English competency | → | – Using online oncordances
– Using correction symbols
Instruments
– pretest and posttest
– grammatical error-correction tasks
– questionnaire
– in-depth interview | → | – Effectiveness of self-error correction in English writing |

Fig.2 Conceptual Framework

Research Methodology

Participants

The participants of the study were the 2nd year students studying in English for Communication Program at the faculty of Liberal Arts, Rajamangala University of Technology Thanyaburi. The course used in the study was English Structure for Writing Development. Based on convenient sampling, 35 participants enrolled in this course were recruited. The samples were diverse in their gender and English proficiency level. They were divided into three groups according to levels English language competency including above average, average and below average, as reflected by their grade from English for Communication 2, which was the English Foundation course to measure the effectiveness in using the online concordances for self-error correction.

Context of the study

The participants were assigned to write three kinds of writing: narrative, descriptive and comparison-contrast. The types of grammatical errors were identified into article, noun plural, verb, tense, voice, subject-verb agreement, preposition, part of speech, spelling, infinitive, gerund, modal/auxiliary, there is/there are, pronoun, conjunction, word order, punctuation, adjective, adverb, and capitalization based on Writing Tutorial Services of Indiana University Bloomington at the word level. Moreover, their written tasks were examined by the three experienced lecturers.

Instruments

1. Online concordances were used for correcting errors independently was the Lextutor concordances designed by Tom Cobb, University du Québec à Montréal, Canada. It is user-friendly and appropriate for beginners. It contains 22 corpora for users to search.

2. Correction Symbols were created and given by the teacher as the writing tasks' feedbacks were sent to students

3. Lesson plan was divided into 8 weeks out of 15 weeks of using online concordances in writing three types of writing. Also, the students were trained for two weeks so that they were familiar with using the concordances for error correction. It aimed to train them to use the concordances for error-correction before applying the process to self-directed learning. In this process, they were given exercises to practice.

4. Pretest and posttest were designed by the researcher and examined by the three experienced lecturers. The purpose was to investigate the students' effectiveness and the

grammatical structures which were most and least successfully corrected after using the concordance lines for self-directed learning. The students were assigned to write three types of writing of 120-150 words each before and after using the online concordances.

5. Grammatical error-correction exercises were used to train the students how to use the concordances for self-directed learning. The exercises were designed by the researcher and were examined by the three experienced lecturers. The students had to work with the concordances to discover the correct grammatical rules and then apply to their written tasks.

6. Questionnaire was used to survey the students' satisfactions towards using the concordances for self-directed learning. It was the rating scale of five levels (1: strongly disagree, 2: disagree, 3: neutral, 4: agree, 5: strongly agree).

7. In-depth interview was conducted after distributed the questionnaire to get the information on how the students worked with the concordances: computer concordance skills used, self-observed concordance skills, reflection of prior knowledge and attitudes.

Research procedures

lasted for ten weeks, the procedures include two weeks for the program training. After taking the pre-test, the students were assigned to use the online concordances for self-directed learning by generalizing the grammatical rules through the grammatical error-correction exercises. For the students' written tasks, they were marked by the three experienced lecturers in holistic assessment and sub-categorized the grammatical errors at the word level.

Data analysis

The effectiveness was calculated from pretest and posttest and questionnaire using the percentages, mean, standard deviation and the dependent t-test to be used with one sample measured twice. The data obtained from the interviews were analysed qualitatively.

Research Results

1. Do the online concordances and correction symbols enhance the students' self-directed learning in English writing?

In order to answer Research Question 1, the mean scores and standard deviation in the pretest and posttest of the three experienced raters were calculated. The t-test dependent was also utilized in order to determine significant differences between the mean scores on the posttest and the pretest. The results were demonstrated as follow.

Table 1 Results of pre-test and post-test of the English writing tasks

		N	Mean	SD	t	df	Sig.
Descriptive	Pre-test	35	6.13	1.27	-13.619	34	.000
	Post-test	35	6.88	1.43			
Narrative	Pre-test	35	6.22	1.17	-15.016	34	.000
	Post-test	35	7.02	1.38			
Comparison-contrast	Pre-test	35	6.23	1.10	-11.781	34	.000
	Post-test	35	7.04	1.39			

From Table 1, it can be seen that the online concordances were effectively employed in self-directed learning in terms of self-error correction through all types of English writing tasks including descriptive, narrative and comparison-contrast writing. The post-test scores of all types of writing demonstrated better achievements with statistically significance at .05 level.

Moreover, the correlation coefficients among three raters were investigated to establish reliability of writing assessment. As displayed in Table 2, for descriptive writing task, the values of correlation coefficients among three raters of pretest were at high level (values between .790 to .894) with statistical significance at the level of .05 of all values and the values of correlation coefficients among three raters of posttest were at high level (values between .814 to .832) with statistical significance at the level of .05 of all values. For narrative writing task, the values of correlation coefficients among three raters of pretest were at high level (values between .845 to .855) with statistical significance at the level of .05 of all values and the values of correlation coefficients among three raters of posttest were at high level (values between .831 to .868) with statistical significance at the level of .05 of all values. Lastly, for comparison-contrast writing task, the values of correlation coefficients among three raters of pretest were at high level (values between .790 to .840) with statistical significance at the level of .05 of all values and the values of correlation coefficients among three raters of posttest were at high level (values between .836 to .885) with statistical significance at the level of .05 of all values.

Table 2 The correlation coefficients among three raters

	T1pre1	T2pre1	T3pre1	T1post1	T2post1	T3post1	T1pre2	T2pre2	T3pre2
T1pre1	1								
T2pre1	.894**	1							
T3pre1	.790**	.824**	1						
T1post1	.948**	.865**	.834**	1					
T2post1	.846**	.963**	.798**	.832**	1				
T3post1	.800**	.813**	.929**	.826**	.814**	1			
T1pre2	.886**	.838**	.775**	.901**	.782**	.749**	1		
T2pre2	.848**	.969**	.792**	.846**	.941**	.771**	.845**	1	
T3pre2	.866**	.864**	.906**	.874**	.845**	.895**	.842**	.855**	1
T1post2	.855**	.841**	.847**	.897**	.810**	.802**	.953**	.843**	.839**
T2post2	.872**	.966**	.810**	.875**	.944**	.817**	.837**	.964**	.879**
T3post2	.856**	.856**	.908**	.871**	.811**	.899**	.854**	.837**	.949**
T1pre3	.922**	.870**	.764**	.880**	.806**	.771**	.891**	.851**	.836**
T2pre3	.857**	.948**	.765**	.854**	.927**	.769**	.817**	.941**	.827**
T3pre3	.804**	.819**	.916**	.826**	.792**	.902**	.785**	.782**	.921**
T1post3	.894**	.864**	.850**	.924**	.833**	.838**	.877**	.849**	.859**
T2post3	.864**	.938**	.780**	.869**	.924**	.778**	.801**	.926**	.830**
T3post3	.848**	.848**	.887**	.874**	.853**	.887**	.813**	.819**	.929**

	T1post2	T2post2	T3post2	T1pre3	T2pre3	T3pre3	T1post3	T2post3	T3post3
T1post2	1								
T2post2	.831**	1							
T3post2	.856**	.868**	1						
T1pre3	.832**	.842**	.852**	1					
T2pre3	.804**	.931**	.818**	.840**	1				
T3pre3	.798**	.806**	.926**	.790**	.815**	1			
T1post3	.897**	.855**	.879**	.927**	.857**	.814**	1		
T2post3	.800**	.931**	.819**	.856**	.960**	.817**	.885**	1	
T3post3	.832**	.838**	.906**	.798**	.833**	.936**	.836**	.851**	1

2. What were the grammatical errors corrected before and after using the online concordances and correction symbols?

From analysis of the grammatical errors at the word level, it was found that the students with above-average-level of English competency had 15–32 errors, 15–46 errors were found among students with average-level of English competency and the below-average-level students had 29 errors before using the online concordances. After using the online concordances, the number of errors was decreased to 6–22, 14–29 and 30 errors, respectively. The five most common grammatical errors occurring in the pretest were conjunction, punctuation, plural/singular noun equivalent to pronoun, capitalization, and verb, respectively. In the posttest, the five most common errors appearing were plural/singular noun, verb, subject–verb agreement, conjunction equivalent to punctuation and pronoun. It is noted that the grammatical errors which occurred in both pretest and posttest but in different ranks were plural/singular noun, verb, conjunction, punctuation, and pronoun. Additionally, the number of errors in the posttest was decreased comparing with those occurred in the pretest except tense, infinitive, modal or auxiliary verb, and possessive which showed more errors. The error of there is/are appeared once in the pretest and none of it showed in the posttest. In addition, there was only one student who was weak making more errors in the posttest (30 errors) than in the pretest (29 errors). Regarding the total number of errors, there were 558 errors in the pretest while there were 400 errors which became lower in the posttest.

3. What are the students' satisfactions towards using the online concordances and correction symbols in self-directed learning?

According to the response in the questionnaire, the students were satisfied with the online concordances at the high level ($\bar{x}$=3.70, S.D.=0.77) when they use the program for self-directed learning in their writing. The top three reasons why they prefer using the program were 1) it was convenient for them to access the program anywhere and anytime they want via computer or mobile phone ($\bar{x}$=4.05, S.D.=0.945), 2) it is more useful comparing with dictionaries because of a variety of examples provided ($\bar{x}$=4.00, S.D.=0.918) and 3) using the program made them discover the grammatical rules by themselves ($\bar{x}$=3.85, S.D.=0.671). Moreover, they agree to recommend the program to be used for other courses related to writing ($\bar{x}$=3.50, S.D.=0.761).

For additional comments from the interviews, some of them mentioned that if comparing with dictionaries or commercial textbooks, the program provides various examples at the word and

sentence levels which made them more understanding about the grammar rules since they learnt and then applied those rules in their sentences. They could select the easy examples to be applied to their sentences. For about the program, they did not feel confused because the teacher explained how to use it step by step and gave guidance which were very clear to understand (but it was hard at the beginning of using the program since they did not get used to it). However, some of them could not decide which words or sentences to be selected to match their context since there are many examples and diverse contexts. If without any correction symbols, they sometimes could not generalize the rules of grammar by themselves.

Discussion

The findings of the questionnaire and interviews supported the use of online concordances for the students' self-directed learning since they had positive attitudes towards corpus use and agreed that it was very useful for acquiring usage patterns since the program could foster their writing and help them discover the grammatical rules by themselves (Cheng et al., 2003; Krishnamurthy, 2004 & Rüschoff, 2001, cited in Chen, 2004; Varley, 2009). In this study, the students did not report coping with the program as the guidance and explanation by the teacher were quite simple and easy to follow, as opposed to Sun's (2000). He mentioned the problem of speed and stability of Internet connections. However, the results of this study are in line with the study of Yoon and Hirvela (2004) who found that the intermediate and advanced learners generally seemed to know how to deal with words in context, as corpora display them. Also, the students preferred using concordances for correcting grammar but Sun's study in 2000 identified that his participants showed a preference for printed dictionaries and grammar books over corpora due to the direct presentation of data.

For giving feedback, the students agreed to use correction symbols together with concordances since this technique may guide them to use their prior knowledge. As mentioned by Tasanameelarp (2010), coded feedback should be provided to the low-proficiency learners as they might be advantageous to low proficient learners and assist them to correct grammatical errors. With reference to students' difficulty in generalizing the grammatical rules, Maneekhao (2001) stated that the concordance program contains a variety of examples; therefore, the students need to use in-depth grammatical analysis to correct errors by themselves. Some students with limited grammatical knowledge cannot identify errors. This is consistent with this study's results since there was one weak student who got more errors in the posttest than in the pretest. From the

survey and interviews in this study, a few of them did not try to correct errors and were lazy to use the program for self-directed learning. According to Lee (2004), the students' previous language learning experience took part in this situation since some conventional teachers gave the students the right answer when checking the students' work. Thus, the students were not familiar with how to edit their work by themselves and waited for the teachers to correct them.

Conclusion

The main aim of the study was to examine the effects of using online concordances to the students' self-revise grammatical errors in English writing, as well as providing suggestions on how teachers can use this tool with students most effectively. In this study, the students had to construct the grammatical rules by themselves through the online concordances and then applied the rules in self-directed learning.

By investigating the word or words in the concordances, the students were expected to inductively learn the grammatical rules. Regarding the results, the students had positive attitudes toward the use of online concordances in English writing. They agreed that the tool was beneficial for acquiring common usage of words and developing their writing skill. Moreover, they did not mention serious difficulty in using the tool to gain the target word/words. It was noted that the level of student proficiency may be worth to be considered since both average and good students seemed to know how to cope with keywords in context while the weak one may need more time and practice to become familiar with the tool. From the interview related to concordance selection, the weak one could not find the expected concordances from the word search as there were numerous concordance lines to be selected for self-directed learning. She selected the concordance lines which best allowed her to induce the rules. When she could not find the expected concordances, she only selected the first two or three lines of concordances and wrote the rules she had thought before, which showed no connection between the rule and the selected concordance lines. Perhaps some guiding rules are better served in order to acquire more grammatical input because of insufficient grammatical knowledge of the target language, and it might be a result of their unfamiliarity with the inductive learning method. Therefore, in the beginning of using online concordances, teachers should observe, guide, and monitor to support the students in the class and also give them tasks for self-study outside the classroom so that they are ready to work with the concordances independently. Teachers should give more time for

training them rather than paying too much attention to self-directed learning only. This can assist them to become independent users in the long run.

Recommendations for Further Studies

1. From the interviews, students consulted either dictionaries or other alternative sources for self-directed learning when they had problems with grammatical rules. It may provide a comparative study between students using those sources and concordances when they correct errors by themselves.

2. There may be a study using correction symbols assigned by the teacher together with concordances in editing.

3. There may be extended period of the research study to investigate the effects of using concordances on the students' long-term retention of grammatical knowledge. Also, a retention test should be administered to investigate long-term learning.

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