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# Concordancers in the EFL Classroom: Cognitive Approaches and Collocation Difficulty

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## ABSTRACT

The study investigates the relative effectiveness of inductive and deductive approaches to learning collocations by using a concordancer. The relationship between cognitive approaches and levels of collocation difficulty is also examined. 81 second-year students from a senior high school in Taiwan participated in the study. The results showed that the inductive group improved significantly better than the deductive group in the performance of collocation learning and easy collocations seem to be more suitable in the concordancer learning setting.

## 1. INTRODUCTION

### 1.1. Inductive and Deductive Teaching Approaches

The topic of teaching grammatical rules with either an inductive, or with a deductive approach has drawn much attention and generated much controversy over the past few decades (DeKeyser, 1995; Hammerly, 1975; Fischer, 1979; Nagata, 1997; Shaffer, 1989). Some researchers point out that the deductive approach, rules first and then examples, is more logical than the inductive one and it helps learners obtain more complete grammatical knowledge (Fischer, 1979). In addition, through the deductive approach, learners are able to acquire concepts lacking in their native language that cannot be made readily apparent with only a few examples (Hammerly, 1975). However, Shaffer (1989) indicated that one problem arising from deduction is that many students may not accurately apply what they have learned in their language use because of not having fully understood the target concept. Furthermore, the approach focuses too much on rules rather than on meanings. Thus, learners tend to become passive rather than active participants in the learning process (Shaffer, 1989). Besides, learners benefit from an inductive approach in which they discover and formulate the underlying grammatical rules by themselves. This cognitive depth leads to longer and better retention of the knowledge. The process of discovering could also be more interesting (Fischer, 1979; Hammerly, 1975).

There has also been much controversy over the application of grammatical patterns within the two teaching approaches. Fischer (1979) suggests that target grammatical rules that are easier and simpler than native language rules should be taught inductively. Similarly, Robinson (1997) concludes that easy rules are more suitable for rule-search learning, while for more complicated ones, using a rule-search method would negatively influence learning outcomes (Reber, 1977, 1980). Omaggio (1986) also points out that the principle of choosing a deductive or inductive approach depends on the complexity of grammatical structures. In other words, easier structures should be taught inductively and more complex ones should be taught deductively. Therefore, the difficulty levels of the grammatical rules play an important role in the selection of instructional approaches.

## **1.2. Corpora and Concordancers**

The use of authentic linguistic examples is claimed to help learners learn better than invented or artificial examples (Johns, 1994). However, how can a teacher obtain a large amount of authentic examples? In the past, teachers usually presented students with examples made up by themselves while teaching inductively. The weaknesses of such a method are that these examples lack authenticity and the amount is limited. Students often have difficulty exploring the underlying patterns from these poor examples.

With the development of computer technology, electronically stored corpora have been developed and used widely (Hunston & Francis, 1998). With a concordancer, ample examples of a specific word or phrase can be displayed efficiently (Lewis, 2000). Thus, the combination of corpora and concordancers provides a promising future in the field of language teaching and learning by allowing learners to discover patterns and adjust their misconceptions by observing extensive naturally occurring examples in real texts (Hill, 2000).

Several studies have reported the use of concordancing for the acquisition of a second/foreign language, such as collocation learning (Kita and Ogata, 1997), lexical acquisition (Cobb, 1999; Thuratun, J, 1996; Aston, G. 1998; Murphy, 1996), grammar (Tribble, 1990), writing (Mills, J. 1994; Todd, 2001; Weber, 2001), and syllabus design and evaluation (Cheung, 1993).

Among them, Todd's quantitative study reports strong correlation between learners' induction from self-selected concordances and self-correction. Turnbull and Burston (1998) reported a longitudinal case study of the concordancing strategies used by two EFL students and used a concordancer to correct English expressions in students' written texts. The results show that learners tend to experience different

levels of success with concordancing strategies. Concordance alone, however, does not necessarily lead to productive induction.

### **1.3. Collocation**

Among the difficulties of learning grammatical structures, ESL and EFL learners often meet problems in the co-occurrence of words, that is so-called collocations (Channell, 1981; Rudzka et al., 1981). Some researchers propose that the knowledge of collocations can not be acquired implicitly (Bahns & Eldaw, 1993; Mackin, 1978). One effective way to learn collocation patterns is through observing vast amounts of recurring patterns of concrete examples in texts (Hill, 2000). Nowadays, the electronically based corpora of authentic language usage and concordancers provide a more facilitative, efficient, and effective way for language learners to learn collocations and for teachers to prepare teaching materials (Woolard, 2000).

### **1.4. Purpose of the Study**

Even though the relative value of the two approaches mentioned above has been investigated for a long time, little research has tried to investigate which learning approach best facilitates students' learning of grammatical patterns when they use a concordancer. Besides, English teachers in Taiwan tend to favor the deductive approach because they believe teaching inductively is time-consuming for both students and teachers. Therefore, the study aims to investigate whether there is any significant difference in learning collocations by using a concordancer with an inductive approach, or with a deductive teaching approach. The relationship between the difficulty of collocation patterns and learner performance will also be examined.

## **2. METHOD**

### **2.1. Participants**

A total of 81 students in the second year of senior high school in Taiwan participated in the study. They were randomly divided into two groups, an inductive (n=41) and a deductive group (n=40). The reason they were chosen was that they had learned English for an average of four years and had adequate reading ability to understand the concordancer output.

### **2.2. Procedure**

#### *The Pilot Test*

The researcher and the teacher participating in the study selected collocation patterns that the students were unfamiliar with and these items were given to two experienced

EFL experts, to judge their difficulty levels. Based on the results of the judgment, the researcher selected the following two collocation patterns as the 'easy' type and two collocation patterns as the 'difficult' type.

Easy collocation patterns:

1. distinguish A from B, distinguish between A and B
2. in excess of

Difficult collocation patterns

1. indignant with, indignant at
2. the gulf between A and B

### *Design of the Pre-test and the Post-test*

The formats of the two tests and exercises were error correction in collocations (See Appendix). The reason for choosing error correction was that according to Woolard (2000), using mis-collocation to teach learners collocations is one effective way to raise learners' awareness of collocations. He further states that correction is a very suitable exercise for using concordances in language education. After the selection of the target patterns, the researcher designed the test items of the pre-test and the post-test. The results showed that the internal consistency reliability of the two tests was .79 and .97 respectively.

### *The Treatment*

The pretest, training, and posttest were conducted in two sessions of the class. The pretest lasts for 20 minutes, the training session lasts for one hour, and the posttest lasts for 20 minutes. Three web-based concordancing tools were introduced to the students in the experiment, including the VLC concordancer by The City Polytechnic of Hong Kong at <http://www.edict.com.hk/concordance>, a Web Concordancer by National Taiwan Ocean University at <http://ntouvlc.ntou.edu.tw/English/search/Default.htm>, and a Concordance Finder by National Chao-Tung University in Taiwan at <http://140.113.115.21/english/word/WordGuess6.asp>. At the beginning of the study, all subjects took the pre-test. Then, the researcher taught the subjects the skill of searching with a concordancer. In the case of the inductive group, the researcher first modeled the process of induction with an example. The induction was a three-stage process that was designed by Todd (2001). First, students were required to search for 5 instances of use of the keyword on a web-based concordancer. Second, the students were asked to induce the underlying patterns through the 5 instances they searched and write down what they perceived. For the last stage, the students were then asked to correct the sentences according to their own induced rules.

In the case of the deductive group, similarly, the researcher also modeled the target process for the students in the beginning. Then, the students were given grammatical rules that were needed to correct the sentences. Next, the students were asked to correct the sentences through studying the rules and examples presented. Finally, all the students in the inductive and deductive groups were provided with the answers to each proofreading problem. After the treatment, a post-test was taken immediately to evaluate the students' performance in collocation learning. Figure 1 and Figure 2 illustrate the exercises completed by the inductive and deductive groups respectively.

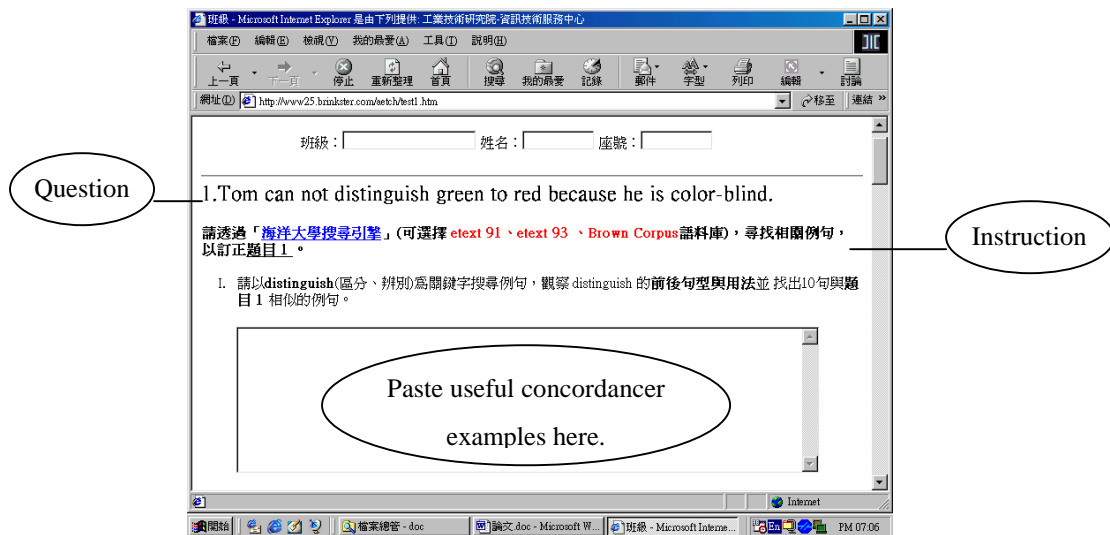


Fig. 1. Web-based Exercises for Inductive Group



Fig. 2. Web-based Exercises for Deductive Group

### 3. RESULTS AND DISCUSSION

Table 1 presents the mean and standard deviation of the inductive and the deductive groups. The results showed that the mean of the inductive group (Mean=65) was higher than the deductive group (Mean=48.5). A one-way analysis of variance was conducted to evaluate the relationship between cognitive groups and learner performance in the collocation test. The ANOVA was significant,  $F=10.43$ ,  $p = .002$  (See Table 2). Thus, the study suggests that the inductive group improved significantly more in collocation learning than the deductive group.

Table 1. Descriptive Statistics of scores for Deductive and Inductive Groups

Approach	Mean	SD	N
Inductive	65.00	24.57	41
Deductive	48.50	21.25	40
Total	56.85	24.31	81

Table 2. ANOVA of Cognitive Approaches on Performance

Source	SS	DF	MS	F	p-value
Between Groups	5512.22	1	5512.22	10.43	.002*
Within Groups	41760.00	79	528.61		
Total	47272.22	80			

\*  $p < .05$

Table 3 and 4 illustrate the descriptive analysis of 'easy' and 'difficult' collocation patterns for inductive and deductive groups. The results of a one-way ANOVA analysis for 'easy' and 'difficult' patterns are presented in Table 5 and Table 6. The findings show that the two teaching approaches only yielded significant difference in the collocation learning of easy patterns ( $F=10.49$ ,  $p=.002$ ). Although there was no significant difference between the two teaching approaches for the 'difficult' pattern, it was as close as one can get to significance ( $p=.050$ ), Table 4 shows that the mean score for the inductive group was higher than the score for the deductive group.

Table 3. Descriptive Statistics of Easy Collocation Pattern for Different Cognitive Approaches

Approach	Mean	SD	N
Inductive	34.27	14.98	41
Deductive	23.63	14.59	40
Total	29.01	15.64	81

Table 4. Descriptive Statistics of Difficult Collocation Pattern for Different Cognitive Approaches

<b>Approach</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>
Inductive	30.73	13.21	41
Deductive	24.88	13.32	40
Total	27.84	13.51	81

Table 5. ANOVA of Easy Collocation Pattern for Different Cognitive Approaches

<b>Source</b>	<b>SS</b>	<b>DF</b>	<b>MS</b>	<b>F</b>	<b>p-value</b>
Between Groups	2293.56	1	2293.56	10.49	.002*
Within Groups	17277.42	79	218.70		
Total	19570.99	80			

p < .05

Table 6. ANOVA of Difficult Collocation Pattern for Different Cognitive Approaches

<b>Source</b>	<b>SS</b>	<b>DF</b>	<b>MS</b>	<b>F</b>	<b>p-value</b>
Between Groups	694.49	1	694.49	3.95	.050
Within Groups	13902.42	79	175.98		
Total	14596.91	80			

p < .05

#### 4. CONCLUSIONS

The results of the current study show that overall the subjects in the inductive group had significantly more improvement than those in the deductive group. This would suggest that concordancers create effective discovery learning possibilities for language learning and teaching.

As to the factor of the difficulty level of grammatical patterns, our study shows that easy patterns tend to be more suitable for the inductive approach, whereas there are no significant differences between the inductive and deductive approaches with regard to the difficult items. Therefore, we may infer that both inductive and deductive approaches can be effective in grammar learning, depending on the difficulty level of the grammar rules. For more difficult sentence structures, more structured and guided aids might be necessary.

English teachers in Taiwan tend to favor the deductive approach because they believe teaching inductively is time-consuming for both



students and teachers. The results of the study indicate that the deductive approach is not superior to the inductive approach at any level, therefore the inductive approach with concordancer should be encouraged.

Regarding recommendations for future research, it would be interesting to compare the learning effectiveness of students being taught both inductively and deductively with those being taught by either method alone. In addition, it would be worth examining if there are subject variables, such as learners' preferred learning styles, motivation, or intelligence aptitude, which may impact on the effectiveness of one way over another. Furthermore, due to limited access to high school subjects, the current study was conducted within two class sessions. It could be recommended that future research conduct a longitudinal study to track student success over a longer period.

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## Pretest

Instruction: Please make correction on the following sentences.

1. Jack's teacher was quite indignant at him for breaking the rules.
2. It is not easy to distinguish your voice and those sounds.
3. There is a big gulf in Tom and his parents.
4. Yesterday the boss declared that profits of our company were to excess of \$2 billion.
5. Your black hair distinguished you to your brother.
6. The cow used as a sacrifice is in excess to 150 kilograms.
7. Mary felt indignant at her boyfriend for drinking too much.
8. It is hard to avoid the gulf in teachers and students.
9. At last, I can write a composition to excess of 400 words.
10. The wife was indignant at her husband for his rude manners.
11. Children are too young to distinguish between good behavior from bad behavior.
12. Tom has a high salary job. His monthly salary is to excess of \$300.
13. The teacher was indignant at me for making strange noises in class.
14. The most useful way to bridge the gulf of children and parents is through good communication.
15. The train can carry to excess of 300 passengers.
16. Everyone should have a clear mind on how to distinguish right and wrong.
17. There is still a gulf in the views of the teacher and most of the students.
18. My father was indignant at the hotel porter for the bad service.
19. It was too dark to distinguish the police and the criminal.

20. A gulf in the father and the child has developed.

### Posttest

1. A gulf in the husband and the wife has developed.
2. At last, I can write an English composition to excess of 300 words.
3. Bob has a high salary job. His monthly salary is to excess of \$400.
4. Bob's parents were quite indignant at him for breaking the rules.
5. Children are too young to distinguish between good things from bad things.
6. It is difficult to distinguish your voice and the other noises.
7. It is hard to avoid the gulf in adults and children.
8. It was too dark to distinguish a truck and a tank.
9. Mark began to feel indignant at his brother for drinking too much.
10. Mary was indignant at the hotel manager for the bad service.
11. The airplane can carry to excess of 200 passengers.
12. The English teacher was indignant at me for talking to others in class.
13. The manager recently declared that profits of our company were to excess of \$2 billion.
14. The pig used as a sacrifice is in excess to 100 kilograms.
15. The way to bridge the gulf of children and parents is through good communication.
16. The wife was indignant at her husband because of his remarks.
17. There is a big gulf in Mary and Betty.
18. There is still a gulf in the views of the leader and most other members.
19. We students should have a clear mind in order to distinguish right and wrong.
20. Your big eyes distinguish you to your sister.