

The Effect of Explicit Deduction and Induction on College Students' Acquisition of Non-Finite Verbs: An Empirical Study

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Abstract

Grammar is an integral part of English learning. There are two explicit teaching methods, namely explicit induction (abbreviated as EI) and explicit deduction (abbreviated as ED). Whether there are different effects in using these two methods to teach non-finite verbs, has not been given enough attention. This study aims to help researchers and teachers understand the effects of ED and EI (abbreviated as induction) on students' acquisition of non-finite verbs. Therefore, the study adopts tests and questionnaires to collect data and selects participants of 86 second-year non-English major undergraduate students from three classes at a comprehensive university. Findings indicate that 1) EI is more effective in teaching than ED, for the average score of the induction class is higher than that of the deduction classes, which shows that the class that adopts the EI performs better. 2) Students are accustomed to the ED but tend to accept the EI. The most common reason leading to such tendency seems to be that students are not confident in their inductive ability due to the lack of sufficient training in EI. Based on the findings, implications for pedagogical practice in L2 classrooms are discussed.

Keywords: explicit deduction, explicit induction, non-finite verbs, college students

1. Introduction

Grammar is one of the most important parts of second language acquisition (SLA). Nowadays, the accuracy of college students' language output is still very weak, which shows that the learners are not proficient enough in the mastery and application of grammar. How to improve the effectiveness of college English grammar teaching within the limited time, has been widely concerned by researchers in China in the context of limited input in the second language classroom and lack of extracurricular application opportunities. Using appropriate teaching methods can improve the effect of learners' SLA. Classroom teaching methods can be divided into explicit instruction and implicit instruction (DeKeyser, 2008). Some domestic scholars generally believe that explicit instruction is more suitable than implicit instruction for China's second language teaching. The typical explicit instruction includes ED and EI (Norris & Ortega, 2001). Some scholars have proposed that non-finite verbs are the most important and difficult part of grammar learning. But the use of non-finite verbs has not been paid enough attention, which has become a gap learners cannot cross for a long time. Although learners use non-finite verbs, it is hard for them to use correctly. To sum up, recent studies have shown that explicit teaching is the most effective way of grammar presentation. However, they do not distinguish the types of explicit instructions. This study aims to explore which type of explicit teaching is more suitable for college students. More importantly, most studies have attached much importance to grammar structures, but not focused on specific grammar rules, such as non-finite verbs. Therefore, it is in great need to conduct some specialized and deeper studies in this domain. This study can provide more empirical evidence of the difference in the effect of two explicit teaching methods in real classroom, and confirm which method is better for complex grammar learning. Through empirical research, this study provides some help and inspiration for English teachers to teach students

non-finite verbs, and can also help students to find an appropriate method in learning grammar, especially in learning difficult grammar rules.

2. Literature Review

2.1 Studies on ED and EI

2.1.1 Studies on ED and EI Aboard

There are many studies on comparative analysis of ED and EI. Widodo (2006) pointed out that induction and deduction are two core methods used in grammar teaching. The research and application of deduction and induction in education have a long history in foreign countries. English teaching method is changing. There have been different schools, such as the Grammar-Translation Method, Direct Method, Audio-lingual method and so on. ED and EI have their own advantages and disadvantages in grammar teaching. Many scholars support EI, Hammerly (2011) said that induction enables learners to discover and find rules by themselves, which is more suitable for learners' cognitive development in SLA. Shaffer (2011) explained another advantage of EI, it can enlighten students to discover rules themselves, rather than passively accept, which may make learning more meaningful. Weatherford (1997) explained the advantages of EI, it enables students to learn language in a natural way and retains what they learned better, because they participated in the self-discovery of rules. In addition, Ellis (1998) also proposed that EI can provide inspiration for students to discover rules themselves, which is more dynamic than just providing them with rules. According to Krashen (1981), he strongly advocates induction in SLA claiming that it is particularly suitable for learners' cognitive development. At the same time, EI needs reasoning, which will help one's cognitive development. Cognitive studies also show students are more conducive to information retention by discovering the basic patterns of learning rather than being told directly (Bruner, 1961).

However, some scholars hold the opposite view, they pointed out the shortcomings of EI. "Induction may be a waste of time and energy, and the teaching of knowledge has become ambiguous, students cannot grasp the rules systematically and accurately." (Stern, 1992; Brown, 1994; Johnson, 2001). Felder (1995) worried that without the formal guidance of teachers, students will have a trend of natural acquisition leading to fossilization. Scholars who support ED, such as Omaggio, believed that students must go through the structural practice stage of grammatical structure before going to the open and creative stage. In addition, through a large number of experiments, adults and advanced learners can benefit more from deduction. However, Johnson (2001) pointed out the complex interpretation of rules may be particularly troublesome as a starting point for teaching, and the teaching process becomes tedious, so that it actually hinders teaching. Harmer (1983) worried that it is difficult to explain grammatical concepts clearly in the process of deductive teaching. "Few people will be comfortable with grammatical explanations and terminology, and still the teacher should be a fluent speaker of students' native language (Harmer, 1983; Johnson, 2001). In addition, Thornbury (2000) and Widodo (2006) summarized the advantages of induction and deduction. In general, researchers have made great contributions to the research on the effect of ED and EI, and have made the research on this topic more and more in-depth.

2.1.2 Studies on ED and EI at Home

EI and ED are often used in grammar teaching. Compared with foreign research, domestic research on these two methods is later. Before 1970s, Grammar-Translation Method has been dominant in English teaching in China. It also known as the traditional method, takes grammar as the focus of learning, and the most important way to teach grammar is deductive method. That is, teachers provide and analyze the rules and principles of grammar, and then through a certain amount of practice, students can finally master the grammar knowledge taught. However, since the late 1970s, Situational Teaching Approach has been gradually popularized and applied in English teaching practice. Grammar teaching method has evolved from deductive method, to inductive method which summarizes grammar rules from a series of grammatical phenomena.

The research progress of EI and ED in China is relatively slow. The relevant results are few using "induction" and "deduction" as the keywords to search on CNKI. Although compared with the foreign research, the number and scale of the research on these two methods are relatively small in China. However, from the beginning of several studies in 2007 to recent years, there are related research papers every year. From this, the researchers have begun to pay attention to this topic. The domestic research on EI and ED, mainly through comparative analysis, analyzes the characteristics of these two different grammar teaching methods. Studies basically cover the scope of primary school, junior high school, high school and university (Yu Jie, 2013; Zhao Li, 2015; Zhong Min, 2020). The research topic is mainly about grammar teaching (Wang Xin, 2011; Han Qingyan, 2016). The latest study (Li Fei & Sun Yunmei, 2019), based on the theory of DoP, adopts the Think Aloud Protocol and takes the subjunctive mood as the starting point to investigate the influence of different explicit teaching methods on EFL learners' learning of subjunctive mood. The results show that different explicit teaching methods can promote different levels of processing, and there is a significant positive correlation between the level

of processing and the effect of second language learning. Therefore, it is concluded that different explicit teaching methods have different effects on SLA.

In these studies, it is believed that EI can improve students' enthusiasm and initiative in grammar learning, but from the analysis of test results, the ED is more effective.

2.2 *Studies on Non-finite Verbs*

2.2.1 Studies on Non-finite Verbs Abroad

Borjars & Burridge (2001) and Yule (2002) studied the details of teaching non-finite verbs in *Introducing English Grammar* and *Explaining English Grammar* respectively and suggested that when teaching non-finite verbs, teachers should take into account differences in meanings and characteristics. In addition, classification and language distance can be used in teaching process, which is also a good way to attract students. However, there is currently little systematic research on how to teach non-finite verbs in countries where English is the mother tongue. Thus, foreign research of non-finite verbs has little reference, which makes teaching of non-finite verbs in China at the stage of crossing the river by feeling stones.

2.2.2 Studies on Non-finite Verbs at Home

As for non-finite verbs, Zhang (2001: 391) reclassified the non-finite verbs into three categories: Infinitive (to do), -ed participle (done), -ing participle (gerund and present participle). And he analyzes the aspects and voices of different forms of the non-finite verbs in English and syntactic functions of non-finite verbs in English, and he gives a much detailed explanation on the non-finite verbs in English from various aspects of practical uses. He asserted that non-finite phrase can be formed by the non-finite form of the main verb, thus making up simple non-finite phrase.

With the deepening of the research, empirical studies on non-finite verbs at home lay much stress on the general description of how non-finite verbs should be used. The contents of empirical studies are concerned with students, teachers, textbooks and teaching methods. Based on years of teaching practice, Lin (1995) found that Chinese EFL learners seem to have experienced a certain order of difficulty in learning non-finite verbs: the past participle is more difficult to learn than the present participle, the present participle is more difficult to learn than the gerund, and the easiest to grasp seems to be the infinitive. Lin Min (2016) explored how the frequency of input affects second language learners' acquisition of non-finite verbs. Based on the input frequency theories, a set of comparative experiments were designed. It shows that the frequency effect has a positive impact on the learning of non-finite verbs, which enriches the theory of SLA. On the basis of interlanguage and error analysis, Yu Jingmei (2010) made a quantitative and qualitative analysis on the errors in the use of non-finite verbs by Chinese English learners, so as to explore the types and the causes of errors, and apply the research results to English teaching. Zhou Xiaohong (2009), turning the subjects to vocational English majors, analyzes their errors in the use of non-finite verbs. For these students, the influence of mother tongue is no longer the main cause of errors in English learning, and intralingual errors will account for an increasing proportion. Secondly, students' grammar learning strategies mainly rely on the teacher's explanation and practice. Students are passive receivers in grammar learning. Through the analysis of the results, this study puts forward some suggestions on the teaching of non-finite verbs. In summary, many studies only draw a relatively unified conclusion that ED is more effective in terms of the actual effect of grammar teaching. And most experiments are still carried out in high schools, while the experiments conducted in university are rare. Moreover, most studies have attached much importance to the general grammar structures, but not focused on specific grammar rules, such as non-finite verbs.

3. Research Questions

The certain aim of this study is to explore the effect of ED and EI on college students' acquisition of non-finite verbs.

Two research questions are formulated: 1) Do students make obvious improvements in the acquisition of non-finite verbs by using explicit deduction (ED) and explicit induction (EI)? Which method is better? 2) What are students' attitudes towards grammar learning and these two methods?

4. Methodology

4.1 *Participants*

Participants were 86 second-year non-English major undergraduate students from three classes at a comprehensive university in China, who failed in passing CET-4 twice, so they were less successful students. They were divided into three classes; the induction class, the deduction class and the control class, with 23, 23, and 40 students respectively; three classes were taught by the same English teacher. They are parallel classes participating in the experiment. ED and EI were used in the two experimental classes respectively, while neither method was used in the control class. The teaching content selected for the study was Text A of Unit One of

Textbook Four of the New Horizon College English, which contained 997 words with 8 present participles, 4 past participles, 4 gerunds and 13 infinite verbs.

4.2 Instruments

4.2.1 Tests

Based on the tests developed by Yu Jingmei (2010), this study used two tests, pre-test and post-test, were given to students in experimental classes and control class. Both tests are about target grammar—non-finite verbs, and consist of 20 multiple-choice questions, 5 blank-fillings, and 5 error corrections. A pre-test was conducted in the first week of the semester before the experiment began. After the teacher completed the teaching of non-finite verbs in the fifth week, the post-test was conducted to investigate whether students in experimental class had mastered the grammar rules and whether students in control class had progressed in their grammar learning. Meanwhile, the purpose of the post-test is to test whether EI and ED have different effects on the students' learning in experimental class.

4.2.2 Questionnaires

Since the advantages and disadvantages of these two teaching methods and expectations or suggestions for grammar teaching could not be observed in the classroom, questionnaires was used to further investigate attitudes towards grammar teaching and their preferences for the two teaching methods were further investigated through a questionnaire. Besides, the students in the control class did not use any teaching method, so two questionnaires were used for control class and experimental classes, respectively. Questionnaire One comprised eighteen statements, which were about attitudes towards grammar learning (Statements 4, 18); preferences for ED (Statement 1, 3, 5, 7, 14); and preferences for EI (Statement 2, 9, 10, 13, 16). Questionnaire Two comprised fourteen statements. The fourteen statements were attitudes grammar learning (Statements 5, 6, 8, 14).

4.2.3 Data Collection and Measures

Participants were given pre-test before the experiment began. They were asked to complete questions in twenty minutes. The same procedure was used for the post-test after the teaching experiment. One month later, the participants answered the questionnaire. First, the researchers graded the returned test papers and assigned points. Then, the scores of the tests were analyzed, and a questionnaire was prepared according to the results. Participants were asked to complete questionnaires that were used to explain deeper reasons for their different grades.

4.2.4 Experimental Procedures

Before experiment, participants were distributed a pre-test. In teaching, different teaching methods are used for two experimental classes. In induction class, the teacher first let the students have a general understanding of the text. The teacher then asks students to find examples of non-finite verbs in the text, and asks some students to share these non-finite verbs in class, who need to explain the grammatical role of non-finite verbs in sentences. Students can discuss with each other during this process, and teacher is ready to help them if necessary. Finally, teacher summarizes and supplements the students' performance. In deduction class, the teacher starts by telling students that they are going to learn non-finite verbs. Then teacher explained the grammar rules of non-finite verbs step by step, and used some example sentences to illustrate the rules. After explanation, the teacher asks students to find relevant example sentences in the text and do some exercises. At the end of the teaching, participants were given the same amount of questions as the pre-test, but with different content, which took 20 minutes to complete. Questionnaires were used one month later, which were collected online through the website.

5. Results and Discussion

5.1 Results of the Tests

In the experiment, the experimental classes and the control class were given two grammar tests, namely pre-test and post-test. Descriptive analysis; Independent Sample T-test and Paired Samples Test were performed on the data using SPSS. The obtained data not only show the different effects of the two teaching methods, but also show that the EI is more conducive to students' mastery of the target grammar.

5.1.1 Descriptive Statistics of the Tests

First, the researchers analyzed the results of the pre-test to see how well the students mastered the target grammar. The researchers then analyzed the results of the post-test with the aim of exploring the delayed effects of the two teaching methods on teaching experiments. The table below shows the results of the tests.

Table 1. Descriptive statistics of the pre-test and post-test

Pre-test				
Class	N	Mean	Std.Deviation	Std.Error Mean
Induction Class	23	56.09	14.75	3.07
Deduction Class	23	54.04	8.73	1.81
Control Class	37	56.27	13.08	2.15
Post-test				
Class	N	Mean	Std.Deviation	Std.Error Mean
Induction Class	23	73.33	14.57	3.04
Deduction Class	23	69.93	11.34	2.37
Control Class	37	64.89	12.66	2.08

Table 1. shows in pre-test, average score of three classes did not reach the passing score, that is 60 points, which shows students have not fully mastered the target grammar, and learning of non-finite verbs is difficult. Neither experimental classes achieved 60 points, small difference indicates that two classes are almost at the same level. The average score of the induction class is higher than that of the other two classes, which shows that the class that adopts the EI performs better. Although average score of the deduction class has also improved, it is not as significant as that of the induction class, indicating teacher's guidance on grammar learning is not as good as the students' induction. Although the post-test scores of control class were significantly higher than that of pre-test, it was the lowest among the three classes. It is worth noting that the pre-test scores of the control class were the highest among the three classes, while post-test scores were the lowest, indicating teachers played an important role in guiding students to master grammar. From the data of the tests, it can be seen that the mean scores of the induction class is higher than that of the deduction class. This result is inconsistent with the research result of Wang Xin (2011), who found the performance of the deduction class is better. He thought that ED and EI have their own advantages and disadvantages, but as for vocational college students who are more psychologically and cognitively mature learners with motivation in an EFL environment, it is rather more efficient for grammar rules to be conveyed and acquired deductively. In this study, the performance of the induction class, reaching the adequate level, is higher than that of the deduction class, and the deduction class is close to the adequate level. The possible reason is that participants in this study are sophomores from a domestic double first-class university. They are accustomed to self-learning methods and can complete exploratory learning tasks.

5.1.2 Comparison of the Scores of the Tests of Three Classes

Table 2. Independent sample t-test for the scores of induction and deduction classes in pre-test

		Levene's Test for Equality of Variances		T-test for Equality of Means					
Score	Equal Variances	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Lower Upper
		5.702	.021	.572	44	.570	2.0435	3.5730	-5.1574 9.2444
				.572	35.730	.571	2.0435	3.5730	-5.2048 9.2918

In table 2, it shows Sig.= 0.021 < 0.05, which represents that Equal variances is not assumed; hence, T-test for equality of means refers to second row of Sig. (2-tailed), which is 0.571. Since P= 0.571 > 0.05, it can be seen that there are no significant differences in the scores of induction and deduction classes in Pre-test, which indicates two classes are almost on the same level.

Table 3. Independent sample t-test for the scores of induction and deduction classes in post-test

		Levene's Test for Equality of Variances		T-test for Equality of Means					
Score	Equal Variances	F	Sig.	t	df	Sig.	Mean	Std. Error	95% Confidence

						(2-tailed)	Difference	Difference	Lower	Upper
Score	Equal	2.282	.138	.881	44	.383	3.3913	3.8505	-4.3688	11.1514
	Variances									
	Equal			.881	41.502	.384	3.3913	3.8505	-4.3820	11.1646
	Variances									

In table 3, it shows that $\text{Sig.} = 0.138 > 0.05$, which represents that Equal variances is assumed; hence, T-test for equality of means refers to the first row of Sig. (2-tailed), which is 0.383. Since $P = 0.383 > 0.05$, it can be seen there are no significant differences in the scores of induction and deduction classes in Post-test. The study found that in the post-test, the mean scores of the two classes improved significantly, but there was no significant difference. But compared with the control class, the performance of the experimental class improved significantly. The reason may be that the teacher plays an important role in guiding students to master the grammar rules. Because whether it is ED or EI, teachers play an important role, but the degree is different.

Table 4. Paired samples test for the scores of control class in pre-test and post-test

		Paired Differences								
		95% Confidence Interval of the Difference								
		Mean	Std.	Std. Error	Lower	Upper	t	df	Sig.	
Pair 1	Pre-test -Post-test	-8.60811	15.80706	2.59866	-13.87844	-3.33777	-3.313	36	.002	

In table 4., Paired Samples Test shows two variances have significant difference, since $\text{Sig. (2-tailed)} = .002 < 0.05$. Therefore, the obvious difference between the scores of control class in pre-test and post-test can be obtained through data analysis. The control class did not adopt any teaching methods to teach non-finite verbs. And the difference between the post-test and the pre-test of control class is not obvious, indicating teacher lacks guidance and the students have not mastered the grammatical knowledge of non-finite verbs. In addition, as for the control class, they learned implicitly and did not adopt explicit teaching.

5.2 Results of the Questionnaires

5.2.1 Students' Attitudes Towards English Grammar Learning

Table 5. The results of the questionnaire for the experimental and control classes

Experimental Class					
	Strongly	Disagree	Not Agree or	Agree	Strongly
Grammar rules can help me understand English texts better.	0.00%	0.00%	25.53%	7.66%	46.81%
Interest in learning English grammar	0.00%	4.26%	23.40%	34.04%	38.30%
Participation in learning grammar	17.02%	25.53%	23.40%	17.02%	17.02%
Control Class					
Grammar learning is very important.	2.50%	2.50%	30.00%	22.50%	42.50%
Learning English grammar is not very useful at university	42.50%	10.00%	27.50%	12.50%	7.50%
A good grasp of English grammar will help improve my confidence in English learning.	0.00%	10.00%	25.00%	27.50%	37.50%

Regarding whether they are interested in English grammar learning, 72.34% of students strongly agree or agree with the statement, which means that nearly three-fourths of the students show their interest in learning grammar. As for participation in learning grammar, 82.98% of the students agree, indicating that they want to participate in the classroom more than listen to the teacher. Whether grammar rules can help them understand English texts better, 54.47% of the students strongly agree or with the statement, which means more than half of the students have realized the role that grammar rules play in understanding English texts better. Thus, the data shows

students in experimental classes have positive attitudes towards grammar learning, and they expect the teacher to teach grammar rules in class. Since teacher did not teach grammar rules in control class, students were also investigated on whether they needed teacher to teach them grammar rules in class. For the importance of English grammar learning, 65.00% of the students strongly agree or agree with the statement, which means that nearly two-thirds of the students have realized the importance of learning grammar. For learning grammar is not very useful at university, 52.50% of the students strongly disagree or disagree, indicating that over half of the students believe that learning grammar is very useful at university. For a good grasp of grammar will help improve my confidence in English learning, 65.00% of the students strongly agree or agree with it, which means that nearly two-thirds of the students think that a good grasp of English grammar will have a great effect on the increase of their confidence in learning English.

It can be seen from results that students are aware of the importance of English grammar learning, but due to a lack of interest in learning English, students cannot effectively master and use it, especially in reading articles. Moreover, a poor mastery of English grammar will directly affect students' confidence in learning English. The conclusion drawn from the questionnaire is that it is very important to help students learn and master grammar effectively in college English classes.

5.2.2 Students' Attitude Towards ED and EI

Table 6. The results of some questions for the experimental classes

Items	Statements	Strongly disagree	Disagree	Not agree or disagree	Agree	Strongly agree
ED	1. Participation in the teacher's grammar teaching activities.	0.00%	4.26%	12.77%	40.43%	42.55%
	Giving some examples at first while teaching grammatical rules.	0.00%	0.00%	10.64%	19.15%	70.21%
	Listing a proper number of examples.	0.00%	0.00%	12.77%	34.04%	53.19%
	Teacher's guidance in teaching grammar.	0.00%	0.00%	12.77%	23.40%	63.83%
	Correcting grammatical errors under the teacher's guidance.	0.00%	0.00%	14.89%	27.66%	57.45%
EI	Finding grammatical rule by examples myself.	0.00%	6.38%	31.91%	40.43%	21.28%
	Having enough time to think in class.	0.00%	4.26%	19.15%	38.30%	38.30%
	Providing proper time to find rules in class.	0.00%	0.00%	17.02%	29.79%	53.19%
	Generalizing rules in my own words.	0.00%	8.51%	48.94%	25.53%	17.02%
	Classifying rules by myself after learning.	0.00%	6.38%	34.04%	34.04%	25.53%

As for deduction, for the statement that teacher listed some sentences at first when explaining the grammar, 89.36% of students strongly agree or agree, which means that the majority of students expect teacher to give some examples at first when teaching grammar rules. As for whether the number of example sentences provided by the teacher is appropriate, 87.23% of students strongly agree or agree, which means majority of students accept teacher's way of teaching grammar rules. Whether the teacher plays a guiding role in grammar teaching, 87.23% of the students strongly agree or agree, which means the large majority of the students may believe that teacher will make it easier for them to understand the rules better. As for the statement that the teacher guided students to correct grammatical errors, 85.11% of the students strongly agree or agree, which means that the majority of the students accept the teacher's important role in guiding them to correct errors. As for induction, for the statement that the teacher provided proper time for students to find the grammatical rule in class, 82.98% of the students strongly agree or agree, which means that great majority of the students think that they have enough time to find the rule by themselves in class. Whether they have enough time to think in class, 76.60% of students strongly agree or agree, which means most students think that they have enough time to think in class. As for students' abilities to find grammar rules by examples on their own, 61.71% of the students strongly agree or agree, which means more than half of the students think they are able to find grammar rules by examples on their own. The results show that students prefer the teacher to use the ED. Because they think the teacher explained the grammar points more accurately. However, at the same time, the students also showed a tendency to accept the EI. The reason may be that although they can generalize grammar rules by themselves, they lack

training, so they lack confidence in ability to generalize. So in current English teaching, both teachers and students are accustomed to ED. With improvement of autonomous learning ability, it is necessary for teachers to use EI appropriately.

6. Conclusions

In order to explore different teaching effects of the EI and ED, this study uses tests and questionnaires. By collecting relevant data and analyzing it, the following findings were obtained. First, test results showed students in induction class scored higher than those in deduction class, followed by students in control class. There are many reasons. First, the use of EI can stimulate students' curiosity and interest in classroom and cultivate their problem-solving skills. Secondly, average scores of the tests of induction class are higher than those of deduction class, which shows after a year of college English study, students are more willing to explore knowledge to achieve independent learning, rather than relying on teachers. Finally, results of questionnaires showed students prefer teachers to use ED, possibly because they think grammar explained by teachers is more accurate. But students also showed a tendency to embrace EI, probably because while they could summarize grammar rules by themselves, they lacked confidence in ability to summarize rules for lack of corresponding training. In English classes, teachers rarely use EI due to requirements of courses and exams. Students are also used to listening to teacher's explanation, which saves them a lot of time and energy.

Therefore, due to various reasons, both teachers and students have become accustomed to ED. In order to obtain the best teaching effect, teachers should adopt targeted teaching methods according to learners' abilities; preferences and teaching content. First of all, the teacher should consider student's English level. For high-level learners with higher comprehension ability, they are more likely to accept abstract grammatical rules, so ED can be used. But some learners think EI is more suitable for developing exploration abilities. Secondly, teachers should consider the difficulty of target grammar and use appropriate methods. When grammar rules are relatively simple and easy to understand, EI can be used. For more complex grammar, if the teacher clearly tells students grammar rules, students can easily accept the knowledge, it is best to use ED. Finally, teachers should properly arrange the teaching activities of EI. It is a step-by-step process gradually improves students' ability to summarize grammar rules on their own, enabling them to maintain long-term memory of grammar rules. In the process of implementing EI, many problems may be encountered. For example, students may find it difficult to summarize grammar rules, so teachers should encourage students as much as possible to increase their self-confidence.

This study has several limitations. First, although we found no significant differences between participants through our data analysis of the pretest, there are many other factors that influence student learning. On the other hand, the number of participants was only 86, from only one university and not representative of all universities with different characteristics. Secondly, ED and EI cannot be clearly separated. When teachers use the ED or the EI, this study only refers to the main method, for the teacher may use another method when using one method. Finally, due to limited time and energy, when comparing the effects of the ED and EI, the researcher only chose non-finite verbs as the target grammar of this study. The author believes that adopting appropriate teaching methods is critical to student learning. ED and EI are comparable, and the teaching method used depends on the situation. To this end, further research could include a model of the fusion of ED and EI in teaching.

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