

Study on Main Factors Influencing Chinese Students' English Grammar Learning

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Abstract—By observing three classrooms of one teacher from Guangdong province of China and making online and offline interviews with the observed teacher and three students from the observed classroom, the main factors influencing college students' English grammar learning are found: beliefs, learning strategies, teaching methods and mathematical thinking, etc. Teachers and students view grammar as principles and rules; students seldom learn English in contexts and put what they have learnt into practice; the teacher and the students prefer explicit grammar instruction; the students are lack of mathematical thinking and thinking-developing is ignored in English grammar teaching. Some suggestions are put forward to improve the teaching effect and develop students' mathematical thinking in English language teaching and learning.

Keywords—English grammar learning; beliefs; learning strategies; teaching methods; mathematical thinking

I. INTRODUCTION

Grammar, as a component of English language, plays a significant role in English teaching and learning because it can influence the students' learning in listening, speaking, reading and writing. Although teachers spend much time and energy in instructing grammar knowledge and learners work hard at it, the present situation of grammar teaching and learning in Chinese vocational colleges is far from satisfactory. Most the vocational college students have been learning English for almost ten years since they were in Grade 3 in their primary school, yet many of them cannot write or speak sentences with correct grammars and some even do not know the basic grammar rules. In this case, many English teachers may ask why this should be and what makes this happen.

Numerous studies have been conducted on the factors which have an influence on learners in second language learning. For example, Gardner [1], in a social linguistic context, described the role of attitudes and motivation in second language learning. Liu [2] analyzed the influencing factors of metacognition in English writing. However, few researchers have focused on factors influencing English grammar learning (with the exception of [3], [4]). In order to help to improve English grammar teaching and learning and to enrich the study in this field, this assignment sought to answer the question: what factors influence students' learning in English grammar?

This assignment consists of seven parts. In Part I the topic of being chosen to be discussed, the reasons for choosing it and the whole structure are introduced. A brief introduction to my teaching context is made in Part II. Part III is a literature review about the studies and research on grammar, grammar teaching and learning, etc. Research methods (observation and interview) and the limitation are presented in Part IV. Findings in three classroom observations and the interviews for three students and one teacher are presented and analyzed in Part V. A detailed discussion about the findings and some suggestions can be read in Part VI. Part VII is a brief conclusion.

II. CONTEXT OF ENGLISH TEACHING

The school in which I am working is a vocational college in Guangdong province, China. Most teachers who teach non-English majors English graduated from comprehensive or normal universities, majoring in English or English Education, with a B. A. Degree or a Master's Degree. Most of the teachers who graduated from normal universities have studied English Grammar as a major subject. Therefore, they view grammar very important and they think accuracy is a key factor for students to learn English well. The observed teacher in this research has also gained formal education about English in a normal university. She attaches much importance to grammar teaching. All the students are enrolled in our college with low scores (with a mean of about 75 in the total points of 150) in college entrance English examination. College English is a compulsory course for the first-year non-English major students. They have six periods of English class a week for the academic year. In the first semester, the books used by students and teachers are usually published by some noted presses in China, such as Higher Education Press, Shanghai Foreign Language Education Press, etc. which are designed for higher vocational college students. In the second semester, the students should pass the test of PRETCO (A) (Practical English Test for College Students — Level A) before they get the diploma, and in the test, the part of grammar and structure accounts 15 points, 15 percent of total points. The teachers think if they want to help their students make a progress in their English and pass the exam, they should improve their English grammar first. Therefore, the reference materials of preparing for the test is used as teaching materials in the second semester, and most

of the class time is used to explain and analyze test papers, especially grammar points.

III. LITERATURE REVIEW

A. *The Definition of Grammar*

Batstone [5] thinks that grammar is not static and it is a momentum and a resource to guide the speakers in their communications. Larsen-Freeman [6] also holds that grammar is not static knowledge but a dynamic process, and she thinks that grammar is a kind of language skill, just like such other language skills as listening, speaking, reading and writing. Thornbury [7] states that grammar is not just some information but a language skill. Scrivener [8] thinks that only when learners can make production automatically with the explicit grammar knowledge will the grammar rules, tests and exercises be useful. All the above definitions agree that grammar is not just fixed rules, tests, exercises, etc, but a language skill which learners can use in a flexible and communicate way in genuine life to make the communication more effective and successful. Grammar is not rules which learners can grasp just by learning it by rote, but a dynamic process which learners can modify to suit their own context to make their communication genuine and perfect.

B. *The Place and Role of Grammar in English Language Teaching and Learning*

As for the place and role of grammar in English language teaching and learning, there still exist some controversies. Binney [9] argued that whether the writing level is high or not is not necessarily related to the grammar proficiency. However, Burgess and Etherington [10] provide certain evidence to support that grammar is very important in English language teaching and learning. Celce-Murcia [11] says "Noticeable and convincing proof shows teaching without grammar can only lead to cripple in foreign language whether it is based on comprehension or on communication. Students can't make progress if surpassing the stage".

Grammar is theoretically and basically important in English teaching. It is essential for a listener to correctly understand or comprehend a dialogue. If the reader has a good command of grammatical knowledge and competence, he/she will eliminate many blocks in reading to have a better understanding of the meaning of the sentences, the cohesion and rhetorical organization of the passage, to grasp much more information from reading, and to realize the reading purpose. Sentences with good grammatical knowledge and styles are a basic requirement for a good writing. A good command of grammatical knowledge helps better develop students' communicative competence. Grammar can make language more accurate and our ideas forward and thoughts communicable.

C. *Studies on Beliefs in Language Learning*

Basturkmen, Loewen, and Ellis [12] define beliefs as "statements teachers made about their ideas, thoughts, and knowledge that are expressed as evaluations of what 'should be done,' 'should be the case,' and 'is preferable'". Pajares [13] states that how people perceive and judge an issue is

influenced by their beliefs. One's beliefs determine his/her perceptions and influence his/her actions. People with different perceptions on one certain issue take different actions to it.

There are some studies on learners' beliefs concerning language learning. Schulz [14] states that students' beliefs are important factors in the process of their accepting the teaching. Borg [15] thinks that students' beliefs of preferences can have an influence on teachers' teaching decisions. Ferreira Barcelos [16] notes that "beliefs are considered one area of individual learner differences that may influence the processes and outcomes of second/foreign language learning/acquisition (SLA)". Bialystok [17] has found that the degree to which learners believe whether the purpose of language learning is formal or functional influences their choice of learning strategies. Wenden and Rubin [18] support Bialystok' [17] idea, and they have found what learners' emphasis in language learning can influence their learning strategies.

Learners' beliefs on language and language learning can determine the learners' learning expectations and choice of learning strategies. As well, teachers' beliefs on language determine their teaching aims, the choice of teaching approaches and methods, teaching materials, teaching procedures, classroom arrangements, etc. Learners' beliefs are a very important factor that teachers should consider when they make decisions in their language teaching. Teachers should know well about their students' needs, attitudes, and expectations in their learning. If so, the relationship between the teacher and his/her students will be improved, and this motivates the students to like English more and study it harder. As Jean and Simard [4] says, "When one understands the intent or the needs of the other, it is more likely that the teaching-learning relationship will be rewarding".

D. *Studies on the Teaching Content*

Ellis [3] states that what rules are chosen to be taught may influence the effect of grammar teaching though various ways can be used in grammar practices and error corrections. It is really a disputed question what grammar should be taught and learnt. Currently there are several positions about it. Binney [9] argues that "we teach only that grammar which can be used to improve speaking and writing." Yet a question for me is how I can tell which grammar can be used to improve speaking and writing and which ones cannot. Certainly, in our practical teaching, most of teachers present the common grammatical points which are what our coursebooks include, or measured in examinations, or required by the school, the learners or their parents [19]. It is not fixed what we should choose to teach or what we should not choose to teach. Before we decide what to teach, we should consider our teaching aims and our teaching context.

E. *Studies on the Ways of Grammar Teaching and Learning*

The issue about how to teach and learn grammar has aroused a lot of debates. Here are three main debates on this issue.

The first debate is mainly focused on explicit (formal) and implicit grammar instruction. Tode [20] divides L2 grammar instruction into two types: explicit instruction and implicit instruction. Explicit instruction is held consciously by explaining examples and doing exercises which focus on forms deductively or inductively [21]. In implicit instruction, grammatical rules are learnt unconsciously by exposing learners to examples [22]. In this debate, one extreme position is that formal/explicit instruction is essential in grammar learning [23], [24]. Another extreme position is that explicit instruction is not necessary [8], [25]. Besides these two extreme positions, some researchers neither deny the role of formal and explicit instruction of English grammar nor exaggerate its role. Ellis [3] thinks whether students have prepared well to apply themselves earnestly to consciousness-raising and to practice to reach automaticity is responsible for the effectiveness of formal instruction. He states whether learners are likely to benefit from formal instruction most or least is depended on such characteristics as learners' age, language proficiency, and preparedness to invest energy in automatizing explicit knowledge, personality, attitudes and so on. Ur [19] is in a neutral position and states that both implicit procedure and explicit procedure are needed in order to achieve effective teaching and learning in grammar as with vocabulary. Students benefit from explicit instruction of grammar rules which are relatively simple and easy to understand; students benefit much more from the exposure to examples than the explicit instruction of grammar rules which are difficult to understand [6]. Celce-Murcia [26] or meaning) as a continuum, providing six variables which are relevant to focusing on form to guide teachers' teaching, such learner variables as learners' age, proficiency level, educational background, etc., and such instructional variables as language skills, register and need or use.

Another debate is mainly focused on inductive instruction or deductive instruction of grammar. In an inductive instruction, language samples are presented first, and certain language rules are summed up and set up by analyzing and sorting out the phenomena in the samples. This is a process from specific issues to general rules. In a deductive instruction, a grammar rule is presented first and then exercises or examples involving the rule are given. This is a process from general rules to specific issues. However, studies on these two approaches to teaching explicit knowledge have not achieved consensus on the relative effectiveness of them. Hedge [27] points out that students can learn something in an inductive way in which they integrate English knowledge together with their L1 knowledge and other languages, make out assumptions, verify these, and rebuild and polish their grammatical knowledge. As well, Rutherford [28] and Sharwood Smith [29] provide theoretical support to the popularity of the inductive approach. Ellis [30], has found that inductive instruction is much effective than deductive instruction. However, Erlam [31] has found deductive instruction has a significant advantage. Rosa and O'Neill [32] have found there is no significant difference in effectiveness between these two approaches.

The third debate is about whether grammar teaching should be intensive or extensive. According to Ellis [33], in intensive grammar teaching, a single grammar point or a pair of compared points are instructed systematically in a concentrated time, and practice is a common way, while in extensive grammar teaching, several or many grammar points are instructed simultaneously and superficially in a single lesson, with error correction in the analysis of test papers or in a context of communicative teaching. Some researchers prefer intensive grammar instruction [34], [35]. Some researchers think that students can automatize the learnt grammar points by doing sufficient practices ([19], [28], [27]). However, some other researchers prefer extensive instruction [36], [37].

There is no one best way which can meet all demands of the grammar teaching. Some researchers hold that there is no one way in grammar teaching which can be well applied in every situation and teachers should choose appropriate approaches according to specific situations [33], [38]. Explicit or implicit, inductive or deductive, intensive or extensive grammar instructions, each has its own advantages and disadvantages.

Explicit instruction is necessary for adult students whose English proficiency is low, and it is effective for the simple grammar structures and points. However, the samples used in explicit instruction may be not practical and authentic, which may make learners bored and not impressed by the structures, thus it is possible for students to forget what they have learnt soon. Implicit instruction can make students acquire grammar unconsciously in authentic and contextual situations in a relatively interesting and relaxing way. However, for some situations, it is hard for implicit instruction to arouse learners' grammar consciousness. It is appropriate only for the learners' with high English proficiency.

Deductive instruction is more straightforward and consumes less time than inductive instruction. However, deductive instruction can make learners accept the instructed knowledge more passively. It tends to result in teacher-oriented. Inductive instruction can leave much more time for learners to think and make summaries.

Intensive instruction is essential for the master of some grammar points by being practiced repeatedly and systematically. It can improve learners' accuracy in using some grammar knowledge. However, intensive grammar instruction is so time-consuming that the number of grammar points which can be addressed is limited. In extensive grammar instruction, numerous grammar points can be addressed and repeated for a while. As well, extensive grammar instruction makes it possible for teachers to address and analyze errors individually and contextually. However, it is hard to reach the grammar points which students' may intentionally avoid. In addition, deep practices cannot be provided by extensive instruction, which are needed for some grammar points before they are completely understood and correctly used.

Undoubtedly, if we can combine developing students' communication abilities with arousing their grammar

consciousness and enriching their explicit grammar knowledge, it is very likely to improve students' grammar ability. Batstone and Ellis [39] list three principles for grammar teaching. Ellis [30] also put forwards ten principles for grammar instruction. We should balance the relationship between form and meaning, explicit input and implicit output, accuracy and proficiency, and knowledge and competency.

IV. METHODOLOGY

Classroom observations and interviews are used in this assignment. Before I made classroom observations, I asked the teacher for permission, and told her the purpose of my observations. In addition, the teacher introduced me to the students and told them my aim. Before I interviewed the teacher and her students, I have asked for their permission for recording and explained the purposes and reasons for the interviews. I expressed my appreciation for their cooperation and time. I promised them that all the materials I got from the observations and interviews would be used only for this assignment. I made them know that it was not necessary to worry about anything, and they could say anything that they were willing to say. Of course, they could stop the interview at any time if they felt it was not appropriate. Out of concern over privacy issues, and at the request of the observed and the interviewees, all information gathered in this research is anonymized, substituting Teacher for the teacher, Student A, Student B, and Student C for the three students respectively.

A. Observation

Classroom observations “could have provided valuable triangulation for the attitudes expressed within responses” [13]. Only by observing classrooms, can we know what really happens in class. In order to get better understandings of the factors influencing English grammar learning, in this assignment, one teacher and three of her students are observed. Based on the research objectives and owing to the limited time and the length of this assignment, three observations are appropriate to be made, each observation lasted 45 minutes.

The observed teacher is experienced, passionate in committing to the research of English grammar teaching. In addition, just as me, she is puzzled about the factors influencing her students' grammar learning and her grammar teaching. In her classroom, the teaching methods/approaches, teaching activities, teaching material/grammar points, etc. were observed, all of which may be external factors influencing the students' grammar learning.

Certainly, learners' internal factors cannot be ignored, so three students' performance was observed in this assignment. These three observed students were chosen according to their gender, performance (such as interaction with the teacher, attention to the lecture, etc.) in my first observation and what their English teacher had provided me in a pre-interview with her, I observed them consistently through the following two observations. Student A is female; Students B and C are males.

In the first class, the teacher mainly instructed the usages of the conjunctives used in adverbial clause of result and adverbial clause of purpose. She had a lead-in by inviting

one female volunteer to read a paragraph of a text and asked her to translate the paragraph into Chinese. Then the teacher analyzed a long sentence in which an adverbial clause of purpose is involved. When she instructed that clause, she invited voluntary Student A to read it. After that, they came to the adverbial clause in Paragraph 9 and translated it into Chinese, and then she compared the two adverbial clauses and made a summary for the producers in adverbial clause of purpose. Then, two example sentences were presented and were translated into Chinese. Later, the teacher used the same way—presenting rules, giving examples, English-Chinese translation—to make a comparison for the usages of the conjunctive “so that” used in the two types of adverbial clauses and to make a summary of the conjunctives in these clauses. In the remainder of the class, when the students were doing some related practices by themselves, the teacher wandered among them and offered them help. After most of the students finished the exercises, she explained the answers by inviting some students to speak out the answers and translated the sentences. In this class, Student A, sitting in a front seat, responded actively and took notes carefully. Student B, sitting in a front seat quietly, made notes carefully. Student C, sitting in middle seat quietly and idly.

In the first half of the second class, the teacher instructed the usages of subjunctive mood in the sentences containing a counterfactual if-clause by following the procedures: asking students to read the given sentences, explaining and analyzing the forms of the verbs in the main clauses and the subordinate clauses, summarizing the grammar rules. After the teacher instructed the important and difficult points of the counterfactual conditionals in contexts of past, present and future time references respectively, she asked the students to make a table to summarize the forms of the verbs in the if-clauses and in the main clauses of the subjunctive mood. When the students were making the table, the teacher gave them some hints. Student A and Student B, sitting in front seats, did as what the teacher asked them to do carefully. Student A occasionally had a discussion with her desk mates. Student B just did it on his own. Student C, still sitting in a middle seat, seemed to think about something. Several minutes later, the teacher presented a table about the forms of the verbs of the subjunctive mood, and summarized the principles of the forms of the verbs. In the remainder of the class, the teacher followed the process in the instructions of the exceptions of subjunctive mood: presenting rules, asking some of the students to read the examples and translate them, analyzing and summarizing the examples. The class was ended with a review of what had learnt this time.

The third class was a practice lesson. Many grammar points and structures were reviewed by explaining and analyzing the test items of the part of Grammar and Structure (20 questions) of a PRETCO (A). In this class, the teacher acted as an instructor. She asked the students which item was supposed to choose and why chose it in each question, and asked the students to recall what they had learnt before. Student A, sitting in the same seat with that of last time, listened and responded to the teacher and took notes attentively. Student B, changing his seat to a back one,

listened to the teacher carefully without any response. Student C, in the same seat with that of last time, listened to the teacher and responded to her at times.

B. Interview

To have an in-depth understanding about the issues that cannot be found in classroom observations, some interviews have been done with the observed teacher and students. To know something about the students' interest in grammar, their beliefs on grammar, their grammar learning strategies, etc., the interview questions for students were designed (see Appendix A for the details of the main interview questions for the students and their transcripts). The interview questions for the teacher were designed in order to know something about the teacher's beliefs on grammar and grammar teaching, the grammar teaching methods/approaches, etc. (see Appendix B for the details of the main interview questions for the teacher and their transcripts).

Owing to the students' limited English listening and speaking abilities, all the interview questions were asked and answered in Chinese. The transcripts are translated into English by me in this assignment.

C. Limitation of the Research

There exist some limitations in this research. Firstly, the scale of the classroom observations is small. The grammar teaching and learning may differ from time to time, from person to person, etc., so what the participants said and behaved can only partially reflect their grammar teaching and learning in these days. Secondly, from the classroom observations and interviews, some factors which influence the students' grammar learning may be found, but due to the space limitation, it is impossible to present and discuss all findings in details in this research. In this assignment, only four findings are presented, analyzed, and discussed.

V. FINDINGS AND ANALYSIS

In this part, four main findings about English grammar teaching and learning are listed and analysed. They are about the teacher's and the students' beliefs on English grammar, students' grammar learning strategies, teachers' grammar teaching methods and approaches, and mathematical thinking in grammar learning.

Finding 1: The teacher and the students view grammar as static, difficult, boring but important rules. When answering the question "When we talk about English grammar, what words or phrases will come to your mind?" the students listed "difficult", "boring", "memory", "useful", "important" and "rules", etc., and the teacher mentioned "principles and rules", "presentation", "instruction", "boring", "difficult", "essential", and so on. The teacher answered "Do you think to what extent learning English grammar can help students in their English learning?" with "Largely" and the students answered "Do you think to what extent learning English grammar can help you in your English learning?" with "a large part", "very largely" and "50%".

Finding 2: Learning strategies taken by all the three interviewed students in their English grammar learning are

traditional, and they seldom learn English in contexts and put what they have learnt into practice. All of them answered the questions "Is it easy or difficult to learn English grammar? Why?" with "difficult" or "a little difficult" just because they cannot memorize what they should do and they learn grammar mainly by rote and mechanically:

Student A: Difficult. There are too many things to memorize which we can't memorize in a short period [...] My memory is poor...

Student B: [...] it's a little difficult to learn English grammar. I learn English grammar mainly by memorizing rules mechanically.

Student C: It's difficult because there are many types of points [...] I have no inquiring mind [...] I just take notes and memorize what the teacher taught without thinking.

When answering the question "How do you usually learn English grammar in your spare time?" they said they usually read samples, recite grammar points or rules, remember new words, etc.:

Student A: Usually I read just the samples in my spare times.

Student B: I usually learn English by reciting grammar points, grammar rules and new words in my spare time.

Student C: [...] I just do translation word by word, hardly using grammar [...] And I memorize words when I do morning reading. Seldom do I learn grammar. I just memorize words one by one, not putting them in sentences.

Finding 3: Explicit grammar instruction is preferred by the teacher and accepted by the students, and it is used by many English teachers at different levels. The observed teacher used the explicit grammar instruction in the three observed classes. As well, when she answered the questions "Do you usually use the same methods and approaches as those used in the three observed classes in your English grammar teaching? If no, what else?" she said, "Actually, I almost take these approaches [...] But I cannot think of other methods and approaches that I can use in English grammar teaching." The students provided the following answers to the questions "What methods do you like or not like for grammar teaching? And why?"

Student A: [...] Unluckily, the teachers in middle schools and at college almost use the same methods. They present us the grammar rules with some examples which are rarely linked with our life and study.

Student B: [...] The methods used by our primary English teacher and our college English teacher are basically the same [...]

Student C: The methods used by all my English teachers are almost the same. Usually, they first present the grammar rules with some examples, and then practice [...]

Finding 4: The students lack mathematical thinking and thinking-developing is ignored in English grammar teaching. As for the question "What kinds of mathematical thinking do you think are involved in English grammar learning? Please

give me some examples.” The teacher just gave me a general answer “abilities that are needed in other subjects, such as divergent thinking ability”. When I asked for a detailed example in which certain thinking ability is used in English learning, she couldn't give more except comparing the thinking modes between Chinese and the West. When the students and the teacher answered the question “Have you thought about the question whether there is any similarity between English grammar and any other subjects, such as mathematics?” All of them gave a negative response.

Teacher: Definitely no. It's difficult for me to link English to mathematics. One is liberal arts, and the other is science. There are very distinct differences in the features of these two courses.

Student A: No. I have never thought about this question [...] I have never thought that there is any relationship between English and mathematics [...]

Student B: I have not thought about it. I just think that the way of learning English is like that of learning Chinese. We should learn by rote as much as possible.

Student C: No. I have never heard about this question. Is there any relationship between English and mathematics? It's hard to imagine [...]

VI. DISCUSSION

In the previous two parts, one teacher' classroom observations and the interviews of three students and one teacher have been described, and the main four findings have been listed and analyzed. In this part, these four findings are discussed using the literature discussed in Literature Review to figure out the factors influencing students' English grammar learning and give corresponding suggestions about English grammar teaching and learning.

A. Grammar Should Be Regarded as a Tool and a Dynamic Skill

Although the teacher and the students value English grammar much, they regard grammar as principles and rules. Undoubtedly, as mentioned in Part B of Literature Review, grammar plays a crucial part in language learning and teaching. It guides us to organize and express our ideas more effectively and genuinely. However, we should regard grammar just as a tool, but not as our aim. The grammar teaching and its function can neither be exaggerated nor underestimated.

In addition, grammar is not just static knowledge. As mentioned in Part A of Literature Review, it should be a dynamic skill. Regardless of the aims of the investigated teacher and students in English learning and teaching — to improve English proficiency or pass PRETCO (A), Finding 2 and Finding 3 may result from Finding 1, that is, their learning strategies and teaching methods and approaches in grammar teaching and learning may be influenced by their beliefs on grammar. However, the fact that the teacher and the students think that learning grammar is difficult proves that the teaching methods and learning strategies taken by them currently may not be effective.

B. Explicit Knowledge Should Be Put into Practice to Develop Learners' Communication Ability

As mentioned in Part D and Part E of LITERATURE REVIEW, when we plan a well-focused grammar lesson, we should consider some questions, such as what grammar points should be presented, how much time we should spend on each point, how grammar points should be instructed, and so on. It's not easy in China to make learners exposed to completely authentic activities and conversations to make authentic output, and learners, especially adults need language system which is laid out explicitly with rules to reason deductively. Therefore, it is necessary for teachers to properly present their students explicit grammar knowledge. However, it is hard to improve their English abilities, especially their English communicative ability only by instructing grammar rules explicitly. Hedge [27] points out that there are two kinds of learners. One is analytical learner who prefers to analyze details of something. The other is global learner who prefers to get a whole impression of some new things. Therefore, to meet most students' needs, teachers should use various methods and mix their teaching materials, models and approaches because there are certainly analytical students and global learners in a class. The genuine communication cannot be designed and planned, so learners cannot predict what sentences and expressions are to be used in the further communications, so drills or exercises cannot really practice learners' communication ability. Therefore, teachers should help students put the explicit knowledge which they learnt in classroom into practice and it is very important for teachers to design the activities which can help learners internalize the explicit knowledge to implicit knowledge. By doing so, explicit knowledge can be taken in and internalized, and eventually automatic production can be made. Similarly, learning by rote is not the only one and the best way to learn grammar. We can see beliefs on grammar, teaching methods and learning strategies play so important parts in English grammar that they influence students' English grammar learning.

C. Mathematical Thinking and Thinking-developing Should Be Attached More Importance to

Finding 4 shows that both the students and the teacher have ignored the role and place of mathematical thinking in English grammar teaching and learning. Logical thinking is central in mathematical thinking, and thinking-developing is very important in language learning. Aristotle has founded the European logic and he views logic as prerequisite for all sciences (as cited [40]). Halliday [41] regards the structures of the nominal and verbal groups logical, and he states that “the logical structure of the verbal group realizes the system of tense”. Jean and Simard [4] state it is very important to develop students' critical thinking to question the grammar rules and build their own grammar systems. Pickett [42] says that the basic thought system is one of the issues to be explored from language grammar, which is often shown more obviously in grammar and holds that only when learners understand this thought system can they deal with the language better.

In this part, we have discussed the importance of beliefs, learning strategies, teaching methods and mathematical

thinking in English grammar learning, and come to a conclusion that students' grammar learning can be influenced by beliefs on grammar, learning strategies and teaching methods. The questions to what extent each of the factors influences grammar learning and how we can develop learners' mathematical thinking are still unanswered, and they are worthy of serious research.

VII. CONCLUSION

By taking the research methods of observation and interview, the mainly factors influencing students' English grammar learning are explored in this assignment: beliefs, learning strategies, teaching methods and mathematical thinking. Beliefs determine teachers' and students' decisions and actions in grammar teaching and learning, and mathematical thinking can make grammar learning more attractive and interesting. It is essential to make teachers and students have a deeper understanding of the nature of grammar. And in future, it is practical for us to conduct studies on how to develop students' mathematical thinking in English language teaching and learning. Surely, how to improve learners' grammar is still an issue worthy of further research.

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