

Original Paper

A Study of the Application of Guided Discovery Method in English Grammar Teaching in Junior High School

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Abstract

Grammar is an important part of language. However, in actual grammar teaching, teachers directly impart grammar rules and students passively accept them. This has led to students' disinterest in English grammar lessons and unsatisfactory grammar learning results. In order to promote students' grammar learning, in recent years, some experts and scholars have begun to explore the application of guided discovery method in grammar classrooms. Guided discovery method is a teaching method that emphasizes guidance and focuses on discovery. Through setting up a situation, the teacher guides students to engage in the discovery activity of grammar rules by communicating with each other.

This thesis uses questionnaire survey and interviews to analyze the application of guided discovery method in junior high school English grammar classrooms, as well as to analyze the positive effects of junior high school English teachers' use of the guided discovery method on students' grammar learning. Based on Bruner's Discovery Learning Theory and Piaget's Constructivism Learning Theory, this thesis takes Nanning High-tech Industrial Development Zone Minda Middle School as an example. It was found that under the guidance of guided discovery method, students' interest and motivation in learning grammar have improved. Also, students' autonomous learning abilities have been enhanced. Finally, students' grammar learning strategies were cultivated through guided discovery method. Students can summarize grammar knowledge and solve grammar problems by reasoning and inducting. However, there are a small number of students who still do not have that strong learning ability cannot understand the tasks assigned by the teacher in class, so they do not learn grammar efficiently.

Keywords

Guided Discovery Method, Junior High School English, Grammar Teaching

1. Introduction

1.1 Background of the Study

The study of English grammar is an important part in junior high school, and it is also a compulsory part of students' secondary school examinations. This project is based on the analysis of the current situation of English grammar teaching in junior high school.

The English Curriculum Standards for Compulsory Education (2011 Edition) clearly states: "The overall goal of the English curriculum for compulsory education is to develop students' initial comprehensive language skills, to promote their mental development through the study of English, and to improve their comprehensive humanistic literacy. Comprehensive language skills are formed based on the overall development of language skills, language knowledge, emotional attitudes, learning strategies, and cultural awareness." However, there are still many problems with grammar teaching at the present stage. Many teachers believe that the main task of the English subject, like other subjects, is to cope with the entrance examinations. For students to get high scores in the exams, teachers repeatedly explain all kinds of complicated grammar rules and train with a sea of questions. As a result, English teaching has become a test-taking tool, and students learn English to pass the test. However, students are unable to use English flexibly in real life, have poor language skills, cannot write fluently in English, and cannot use English to understand the world and discover new things. Many students generally think that learning grammar is boring. The main feeling is that the classroom atmosphere of English grammar teaching is dull, and teacher always dominates the class. So students can't get interested in it.

Leutner (1993, pp. 13-32) thinks that the guided discovery method was developed by Dr. Charles E. Wales at the Center for Guided Design at West Virginia University in the 1970s. The guided discovery approach is a model of instruction designed to foster active thinking, active inquiry, self-discovery, and mastery of grammar in the English grammar learning process. It breaks with the traditional teacher-centered classroom and emphasizes that the classroom should be teacher-led and student-centered, giving full play to the students' main role in learning. Unlike the inductive method, the guided discovery method focuses on the teacher providing guidance and assistance to students in the process of discovery, and then clearly presenting and teaching the rules of grammar. It is conducive to solving the drawbacks of teaching English grammar in the deductive method and improving secondary school students' interest in learning English grammar and their grammar ability.

The reason for choosing this thesis is that the current English courses in primary and secondary schools are obviously utilitarian in terms of both content selection and goal setting. This is because many people think that language is only a tool for communication. So that some people even believe that not every student needs to learn English and the English curriculum is optional because not everyone will need to use English in the future. Therefore, I would like to make more people be aware of the nurturing role of the English curriculum by this research. Guided-discovery method in grammar teaching fully embodies Larsen-Freeman's (2005, p. 3) three-dimensional grammar teaching concept

“grammar form, meaning and application”. So that it can cultivates students’ discovery ability as well as their learning autonomy and achieves the purpose of nurturing students.

1.2 Purposes of the Study

This paper, taking the application of the guided discovery method in junior high school as the research object, aims to analyze the situation of junior high school English teachers’ use of guided discovery method in English grammar classroom. The ultimate purpose is to explore the promotion effect of guided discovery method in students’ English grammar learning. The study will discuss the following questions:

Does the guided discovery method help students acquire grammar knowledge? If so, in what specific aspect does it contribute to students’ grammar learning?

1.3 Significance of the Study

The study of English grammar teaching in junior high school is of great significance. This study summarizes the theoretical basis and characteristics of the guided discovery method by studying the problems in teaching English grammar in junior high school. This study analyses the situation of junior high school English teachers’ use of guided discovery method in English grammar classroom. In addition, this study conducts a questionnaire survey on students to better find out the problems and shortcomings of this method, so that it can provide some help and inspiration for more English teachers to teach English grammar and improve the quality of grammar teaching. This study also conducive to improve the effectiveness of grammar teaching in this school. From students’ aspects, Teaching grammar through the guided discovery method makes grammar learning less boring, enables students to gain knowledge through practical activities, develops their ability to use English as well as cultivates students’ interest in learning English grammar. Their abilities to learn independently and summarize the grammar rules are also enhanced. The students’ ability to apply knowledge and problem-solving skills will lay a good foundation for lifelong learning. For me personally, through this study, I have a thorough understanding of the theoretical basic of guided discovery method and realize the implementation process of it. I also understand the meaning of imparting knowledge and educating people. This will lay a solid foundation for my future career in the teaching profession.

1.4 Structure of the Paper

There are six chapters in this paper.

The first chapter is the introduction, including the background, purpose, significance, as well as structure of the study.

The second chapter is a literature review, which is about the definition and feature of the guided discovery method and its study trends abroad and at home. In the end, a brief summary is made in this chapter.

The third chapter is about the theoretical framework. It includes two theories: Piaget’s Constructivism Learning Theory and Bruner’s Discovery Learning Theory.

The fourth chapter explains the research methods, covering questionnaire survey and interview.

The fifth chapter is to analyze the results of the questionnaire and interviews. In the beginning, it demonstrates the data analysis of both the questionnaire and interview results. Apart from the situation of junior high school English teachers' use of the guided discovery method in English grammar teaching, this chapter points out the guided discovery method's positive effects for improving students' interest and autonomy in grammar learning and cultivating students learning strategies.

The last chapter concludes the whole paper and offers limitations and suggestions for future study.

2. Literature Review

2.1 Definition of Guided Discovery Method

The "guidance-discovery method" originates from Bruner's discovery learning method, and at the same time combines the teaching characteristics of China and students' personal characteristics. It is a teaching method that emphasizes guidance and discovery by combining our teaching characteristics and students' characteristics.

Spencer (1999, pp. 1280-1283) also summarized the features of the guided discovery method as follows: by providing learning outcomes to students and a context and framework for learning, learners are responsible for understanding what is necessary to explore through independent learning. Study guides are used to facilitate and guide self-directed learning; understanding of the problem is reinforced by application.

Treffinger (1980, p. 90) thinks that guided discovery learning has the advantage of forcing the learner to control the environment and create new ideas that stimulate and excite students' curiosity, help them find solutions, induce them to analyze and manipulate information, and compare receiving information. Students gain research and reflective skills that can be applied to other situations.

Guided discovery method is a unification of student-centered learning and teacher-centered teaching. Students are given problems or topics to investigate, gaining an understanding of knowledge from hands-on learning, reasoning processes, and feedback. The teacher's role is to provide students with preliminary information and materials for them to explore and discuss. Mayer (2003, pp. 459-462) thinks that another important role is to ask questions, give students guidance, encouragement, and timely feedback. Ellis, Basturkmen, and Loewen (2002, pp. 419-432) show that there is much to be gained from a discovery-based method to teaching explicit knowledge, including greater memory rules found by the learners themselves; active student participation; problem-solving; critical thinking skills development, and increased motivation to learn.

From the above definitions, it can easily find that the guided discovery method focuses on developing students' learning independence and creative thinking. Although different scholars have a different understanding of the guided discovery method, the essence of it is that students learn knowledge actively under the guidance of teachers.

2.2 *Studies of Grammar Teaching*

The emergence of communicative pedagogy in language learning, especially grammar teaching, had received a huge impact, arguing that grammar teaching in the classroom hinders students' language acquisition.

Influenced by foreign countries, especially European countries' English teaching methods, Shen (2017, p. 11) considers that the development of English grammar teaching in China has also gone through the process of emphasis, dilution and re-emphasis. Looking back at the history of English teaching, I found that the domestic research on grammar teaching mostly focuses on three issues.

First, the problems in grammar teaching. Huang and Dai (1999, pp. 65-68, p. 76) pointed out that the problems that exist in the teaching of English grammar in China are: deviations and incompleteness in the elaboration of grammar rules; insufficient attention to American English grammar; and lack of understanding of American English grammar. Finally, the conclusion is that the grammar rules should be correctly and completely demonstrated and properly applied in English grammar teaching.

Second, an effective way is to improve grammar teaching. Shi (2015, pp. 60-65) used questionnaires and English tests to conduct an empirical study to testify the effectiveness of inquiry-based learning in teaching English grammar in high school. The experimental data showed that the inquiry-based learning approach to teaching grammar can increase students' interest in learning grammar and their autonomy in learning, help students develop a cooperative learning spirit, make the students participate more in classroom activities and improve their English performance.

To sum up, most scholars think highly of the status of grammar. The current research on grammar and grammar teaching in China has gradually moved from theoretical study to empirical study and has begun to integrate language form and grammatical function. The research on grammar teaching is not only focused on the improvement of students' grammar and English performance, but also on students' interest in learning grammar, independent learning ability, group cooperation spirit, and the ability to learn.

2.3 *Related Research Abroad and at Home*

2.3.1 *Related Research Abroad*

The guided discovery method is a teaching method that emphasizes guidance and discovery. Since the introduction of the guided discovery method, many foreign scholars and linguists have discussed it from different perspectives:

(1) Exploring the instructional design of guided discovery method

To successfully implement a guided discovery grammar program, teachers must carefully plan instructional activities to ensure that a reasonable amount and type of information is available for students to easily perceive the target language structure. Moreover, Alfieri, Brooks and Aldrich (2011, pp. 1-18) analyze 164 studies on traditional explicit instruction in the field of education, independent discovery learning, and enhanced discovery learning. In all areas of education and age groups, groups using the form of "enhanced discovery" tend to learn better. Researchers compared three types of

students. One is learning by applying the guided discovery method, the other is learning through undirected discovery learning, and the rest is learning with traditional explicit teaching. It finds that the guided discovery method turns out to be more advantageous in promoting students' cognitive development. It also believes that "discovery" is a skill, which should be excavated and should teach students how to discover in grammar teaching.

(2) Conducting empirical research on the application of guided discovery method in grammar teaching
Several linguists have emerged in the field of English grammar teaching to conduct empirical research on the guided discovery method. Fotos (1993, pp. 385-407) found that learners who worked together to solve grammar problems to find grammar rules and learners who take traditional teacher-led explicit grammar lessons both performed significantly better on attention and ability assessments than the control group who did not receive any grammar instruction. However, there was little difference between the group taught using guided discovery method and the students who received traditional teacher-led method. Both guided discovery groups and traditional instructional group showed immediate and lasting improvements. However, the students of guided discovery groups have more chances to communicate. In their study, Fotos (1993, pp. 385-407) found that students who used guided discovery method were more proficient in grammar. Though how great the effectiveness is not clear. Fotos and Ellis (1991, pp. 605-628) describe this type of grammar task as following current trends in general educational psychology and providing meaningful content for learners to study and discuss rather than the unimportant, repetitive content associated with traditional ESL/EFL activities.

To sum up, the researches aboard evaluated guide discovery method from four perspectives. They not only concern the theoretical research, but also conduct empirical research. They concluded that guided discovery method can enhance student research and reflective ability.

2.3.2 Related Research at Home

The guided discovery method was introduced to China in the 1970s, and educators in China, from the perspective of our teaching reality and students' personality, not student blind following to discover.

This teaching method was widely used in high schools and in industrial training at first, especially in science and technology. In fact, guided design is specifically designed to help students develop decision-making skills in various fields. In recent years many experts and scholars have used the guided discovery method in the field of language teaching, and several theoretical types of research and empirical research of the guided discovery method have been carried out on grammar teaching.

In theoretical aspects, Chen (2018, p. 14) said, "Guided discovery method fully embodies the educational and teaching idea of "teacher-led, student-led, discovery thinking as the mainline, and cultivating students' innovative ability as the core".

Li (2008, pp. 37-39) believes that the guided discovery method is a process of guiding and discovering, in which two contradictory parties constantly interact with each other to achieve unity. That is also referred to as the process of discovering and solving problems.

Lu (2009, p. 157) thinks that the guide discovery method is that the teacher first provides students with the language materials containing the target grammar, for instance, listening or reading material. Next, the teacher gives specific learning requirements toward the target grammar, and then students observe and analyze the language materials under the guidance of the teacher. At last, they discover and generalize grammar rules.

Wang (2010, p. 126) considers that guided discovery method advocates providing language input to students by creating situations and allowing them to experience and feel the language. Then, students are guided to analyze the characteristics of the presented material, so as to summarize the grammar rules and apply them through various activities.

In terms of practice, Zhu and Fan (2015, pp. 62-67) pointed out that in the current high school English grammar teaching, teachers still use traditional methods to deduce grammar rules in, and students passively receive grammar rules and mechanical training, which leads to the grammar learning boring and ineffective, and the students' language usability is not improved. They combined a public grammar lesson with the concept of the guided discovery method of grammar teaching and how to use the guided discovery method in teaching English grammar in high school. The case is analyzed and reflected from four aspects: situation presentation, inquiry and discovery, practice and consolidation, and flexible application.

Wang and Chen (2015, pp. 72-74) used questionnaires and English tests to study the effectiveness of the discovery method and the traditional deductive method in high school English grammar teaching on the differences of developing learning interest, improving learning effectiveness and overall English ability. The results show that the discovery method of grammar teaching stimulates students' interest in learning grammar, makes them enjoy learning by exploring, motivates them to learn English grammar, develops their critical thinking skills, and improves their learning performance.

In short, I found that domestic scholars' research on the guided discovery method is based on introducing the definition and characteristics of the guided discovery method, the operational steps of the teaching process, the considerations in teaching and the role of the guided discovery method. Some case studies combined with teaching practice still stay on personal experience of using the guided discovery method and lack real empirical studies. The majority of the research targets are high school students, but there are few studies on junior high school students. The few empirical studies that have been conducted do not use authoritative statistical methods to process the collected data, and their result of studies are not very convincing.

3. Theoretical Basis of Guided Discovery Method

3.1 Piaget's Constructivism Learning Theory

Piaget, a representative of constructivism, emphasized that learning is not simply the accumulation of a large number of external information, but the process of constructing new cognitive schemata based on information. There are two main ways of constructing: assimilation and adaptation. Assimilation is the

process by which an individual is exposed to a new stimulus, the new stimulus becomes a part of the original cognitive structure, and the original cognitive structure does not change. The balance of cognitive structure is achieved. Conformity means that the individual adjusts the original cognitive schema or creates a new cognitive schema to adapt to the new stimulus, and then achieves a new balance in the cognitive schema.

In the learning process, two aspects are vital: students' original knowledge and their engagement in the construction process. Therefore, constructivist theory suggests that the teaching process should be student-centered and stimulate students' active participation; to create meaningful contexts so that students can better construct their cognition of the real society; to pay highly attention to collaboration, and through collaboration with others, we can complement each other's strengths and make our own understanding deeper and more comprehensive. Teachers should respect the subject position of students, treat their differences appropriately, give them opportunities to cooperate and communicate based on their cognitive development level, and gradually progress.

Piaget's constructivist learning theory can provide theoretical guidance for teaching grammar. Inquiry learning and situational teaching fall within the scope of this theory. Teaching grammar through inquiry learning, i.e. through meaningful problem situations, students learn grammar knowledge related to the problem they are exploring, which helps them develop problem-solving skills and autonomous grammar learning ability. Teaching grammar within a context will put students in contagious or realistic grammar situations, which is conducive to improving students' grammar usage skills.

3.2 Bruner's Discovery Learning Theory

Bruner is a famous American psychologist whose main idea of structure-discovery theory of teaching is that the main point of learning any subject is to master its basic structure. Any subject can be taught in a reasonable way to children at a certain developmental stage. To learn well, the discovery method should be used. The guided discovery method is a development of the discovery method, and it is an extension and complement to the discovery method. The discovery method as a systematic approach to teaching was first introduced in Bruner's *The Teaching Process*. The discovery method as a systematic approach to teaching was first introduced in Bruner's *The Teaching Process*.

From Bruner's view, the learning process is not simply the formation of stimulus-response associations, but the active formation of cognitive structures. It is the process by which learners process new knowledge from their existing cognitive structures. For Bruner "cognitive structure" is the representation system, the way various information is recorded and represented in the human brain, which is a set of rules for understanding the world.

Bruner emphasized that learning should avoid directly teacher-provided answers and should encourage students to learn through discovery. "Discovery" is not limited to discovering what humans have not found. It is allowing students to think independently for themselves so that they can discover the structure of the material, the patterns and conclusions.

Bruner's Discovery learning theory can also provide theoretical guidance for teaching grammar. Under the guidance of Bruner's discovery learning theory, grammar teaching takes students as the classroom center. After teachers provide relevant grammar materials, students can summarize grammar knowledge by themselves. In this process, students are active constructors of grammar knowledge, and their ability to think and analyze problems is enhanced, and the efficiency of grammar teaching is improved.

To sum up, Constructivist learning theory emphasizes that teaching is a process in which students, with the guidance of teachers, based on their prior knowledge and incorporate new knowledge into the original knowledge structure. Discovery learning emphasizes that students' learning is not passive acceptance, but a process of exploring and discovering knowledge on their own. Guided discovery method combines the advantages of constructivism and discovery learning. Under the guidance of two theories, students' interest in learning grammar can be greatly enhanced and their learning motivation can be stimulated. Students are more likely to actively participate in the process of exploring and discovering truths, and then they can gain knowledge through practical classroom activities. Students' autonomous learning ability is developed, and students' are more independent during the grammar learning process.

4. Research Methods

4.1 Questionnaire Survey

The author used the questionnaire method to learn about the situation of middle school English teachers' use of guide discovery method in grammar teaching. The participants of the survey were from Nanning Hi-Tech Industrial Development Zone Minda Middle School Class 2, Class 3 and Class 4 of Grade 8, with a total number of 137 students, 45 in Class 2 (28 male and 17 female), 47 in Class 3 (28 male and 17 female) and 45 in Class 4 (21 male and 24 female), with an average age of 15 years. In terms of size, the school is a medium-sized private school in Xixiangtang District. The quality of English teaching is high and also representative of the region. Due to some restrictions, the author only use the traditional test, which is to print out the questionnaire, and then go to the Class 2, Class 3 and Class 4 of Grade 8, giving the questionnaires for each class. Before sending the questionnaire, let the class leader or the English teacher in charge of the class help to emphasize some requirements of the questionnaire, including the questionnaire does not need to fill in the name, each question can only choose one answer and all the answers are objective. On January 10th, the author conducted a questionnaire survey to 137 pupils. After that, the results were analyzed. The author handed out 137questionnaires, and the valid rate was 100%.

4.2 Interviews

The interviews were supplemented in order to gain insight from students' real opinions about using the guided discovery method to teach grammar and to investigate their interest in learning English grammar, changes in learning autonomy, and the effectiveness of enhancing students learning strategies

under the guided discovery teaching mode. Since the interview records did not involve students' name and classes the interviews were conducted in Chinese. So the selected students were willing to be interviewed. In each round of interviews, the researcher communicated with students on QQ and student's answer was elicited by some questions. The researcher invited five students to participate in the interview, and the interview contents were applied to the analysis of this research.

The interview focused on the following questions:

1. Can you adapt to the guided discovery method?
2. Do you think the guided discovery method has any effect on your English grammar learning? If so, what aspects do you think have improved?
3. Do you think the guided discovery method of English grammar is helpful to you? Please explain the reason.
4. Do you have any suggestions for grammar teaching method in the future?

5. Results and Discussion

This chapter analyzes the results of the questionnaire survey and interviews based on Piaget's Constructivism Learning Theory and Bruner's Discovery Learning Theory. In the questionnaire survey, the author focuses on the students' view of the guided discovery method and their current situation of grammar learning. In an interview, the author can find the real idea of students toward guided discovery method and also can find the pro and cons of guided discovery method in grammar teaching.

5.1 Results

5.1.1 Results of the Questionnaire Survey

The author sent 137 questionnaires and all of them are valid. In this part, the author mainly talks about the results of a questionnaire survey of students. According to the data, the author can find out the situation of middle school English teachers' use of guided discovery method in English grammar teaching. The survey results are statistically analyzed by EXCEL. The frequency and percentage of the obtained data are analyzed as follows:

Table 1. Do you Think Grammar is Important in Learning English?

Option	Number	Percentage
A. Very important	72	52.55%
B. Important	48	35.04%
C. Common	14	10.22%
D. Unimportant	1	0.73%
E. Extremely unimportant	2	1.46%

About 52.55% students think learning grammar is very important. About 35.04% students think learning grammar is important. Few students deem grammar learning is unimportant. Consequently, we can learn from the statistic that student's awareness of learning grammar is in a high level.

Table 2. Do you Think that Learning Grammar well will Give you a Sense of Success and Superiority?

Option	Number	Percentage
A. Very superior	38	27.74%
B. Superior	57	41.61%
C. Common	30	21.9%
D. Not superior	8	5.84%
E. Extremely Unsuperior	4	2.92%

Table 2 displays that about 27.74% students feel very superior when they succeeded in learning English grammar. About 41.61% students feel superior about it. A small amount of students have no sense about it.

In short, correlated with previous table, we can know the application of guided discovery method in grammar teaching can cultivate students' interest and maintain their motivation in learning English grammar.

Table 3. Can you Actively Learn Grammar and Complete the Homework Assigned by the Teacher?

Option	Number	Percentage
A. Fully can	37	27.01%
B. Can	50	36.5%
C. Common	44	32.12%
D. Can't	6	4.38%
E. Extremely Can't	0	0

Table 3 shows that about 36.5% of students can actively complete their homework, even 27.01% can fully complete it. About 4.38% students can't complete homework.

Table 4. Do you Take the Initiative to Review the Grammar you Learned after Each New Lesson?

Option	Number	Percentage
A. Very initiative	10	7.3%
B. Initiative	48	35.04%
C. Common	57	41.61%
D. Uninitiative	19	13.87%
E. Extremely uninitiative	3	2.19%

Table 4 shows that about 35.04% of students can initiative review the newly learn grammar, even 7.3% students very initiative to review the newly learn grammar. About 13.87% and 2.19% students are uninitiative or extremely uninitiative to review it.

Table 5. Do you Pay Attention to the Successful Experience of Learning English Grammar?

Option	Number	Percentage
A. Pay much more attention	24	17.52%
B. Pay attention	57	41.61%
C. Common	45	32.85%
D. Pay less attention	8	5.84%
E. Totally not pay attention	3	2.19%

Table 5 shows that about 41.61% of students can pay attention to the successful experience of learning grammar, even 17.52% can pay much more attention about it. Few students pay less attention or not pay attention about it.

From the above three tables, all of them show that students' autonomous learning abilities are at a high level. These statistics also implicate that students have formed some good habits of learning English and they are more willing to learn grammar.

Table 6. Do you Think Grammar should be Discovered by Students and not just Explained by the Teacher?

Option	Number	Percentage
A. Totally agree	27	19.71%
B. Agree	51	37.23%
C. Common	39	28.47%
D. Disagree	11	8.03%
E. Extremely disagree	9	6.57%

Table 6 reveals that about 19.71% of students totally agree and 37.23 students agree with grammar should be discovered by themselves, not just only by teachers. The percentage of students who still want to learn grammar by using the traditional teacher's direct explanation of grammar rules is approximately 15%. The statistics also reveal that students are independent in learning grammar.

Table 7. Do you often Analyze and Solve Grammar Problems through Inference and Induction?

Option	Number	Percentage
A. Usual	25	18.25%
B. Occasion	56	40.88%
C. Not sure	41	29.93%
D. Unusual	12	8.76%
E. Never	3	2.19%

According to Table 7, we can know that about 59.13% of students can use interference and induction to solve grammar problems. About 10.95% students unusual or never use this method to solve grammar problems.

Table 8. Do you often Evaluate the Effectiveness of your Grammar Learning and Summarize the Way you Learn Grammar?

Option	Number	Percentage
A. Usual	16	11.68%
B. Occasion	52	37.96%
C. Not sure	51	37.23%
D. Unusual	13	9.49%
E. Never	5	3.65%

Table 8 also reflects that about 49.64 students can often evaluate the effectiveness of grammar learning and summarize the way of learning grammar. About 13.14% students unusual and never evaluate their grammar learning process.

From the above three tables, we can conclude that students have formed some strategies of learning grammar. And they have formed a good habit of reflecting their learning process and they tend to more likely to learn grammar by themselves.

Table 9. Do you Think your English Grammar Learning Dependency has Improved?

Option	Number	Percentage
A. Greatly improved	22	16.06%
B. Improved	61	44.53%
C. Common	43	31.39%
D. Not improved	6	4.38%
E. Totally not improved	5	3.65%

Table 9 shows that about 44.53% students' grammar learning dependency has improved, even 16.06% students' grammar learning dependency have greatly improved. A small number of students' grammar learning dependency has not improved.

Table 10. Do you Have a more Thorough Grasp of Grammar Rules under the Guided Discovery Method?

Option	Number	Percentage
A. Very thorough	20	14.6%
B. Thorough	55	40.15%
C. Common	49	35.77%
D. Unthorough	9	6.57%
E. Extremely unthorough	4	2.92%

Table 10 demonstrates that about 54.75 students can fully understand grammar rules under the guided discovery method. Only a small number of students cannot grasp grammar rules thoroughly, which account for 6.57% and 2.92%.

Table 11. Has Your Anxiety in English Grammar Class Improved?

Option	Number	Percentage
A. Greatly improved	27	19.71%
B. Improved	44	32.12%
C. Common	51	37.23%
D. Not improved	10	7.3%
E. Extremely not improved	5	3.65%

Table 11 reveals that about 32.12% students' anxiety of learning grammar have improved, even 19.71% have greatly improved. From the above three tables, we can know that the guided discovery method actually take more benefits to students. Students' anxiety and dependency in grammar have improved.

In short, according to the statistical results, the expected targets have been reached. Firstly, a majority of students can adapt to the guided discovery in grammar class and thoroughly grasp grammar rules. Secondly, according to Table 3 to Table 5, it is clear that most students have formed a good habit of autonomous learning. Besides, it also indicates that students are more confident in learning English grammar.

5.1.2 Results of the Interviews

In order to understand more about the effectiveness of the guided discovery method in grammar teaching in middle school accurately, the author randomly selected five students from Nanning High-tech Industrial Development Zone Minda Middle School to do an interview.

For the first question, all five students indicated that they can adapt to the current English grammar. One student claimed that: "In the current grammar class, I had more interest in learning grammar and was more willing to interact with the teacher as well as other students. I love it!" Another student said: "This teaching method helps us learn grammar actively. We are pretty happy about taking part in the learning process. Especially the application of real context, let me really understand the meaning of the target grammar in certain situations, and know how to use it correctly. The way of only teacher explanation of grammar rules is out of date.

The second question was to know about the effect of the guided discovery method on students' English grammar learning. One student said: "This method is really useful and inspire me a lot. Now I can discover and summarize rules for simpler grammar knowledge. In addition, I know how to choose and apply different grammar items in communication and writing." And one student figured out: "I like the teaching method. I have more thinking about the meaning and usage of grammar." However, one student said: "I think my English grammar learning is not improved for the reason that I feel boring as I had an English class. Even though the guided discovery method seems so interesting, I still had no motivation to learn it."

For the third question, most students mentioned that the application of guided discovery method in English grammar teaching was beneficial to them. One student said: "I'm satisfied with it. And I hope that my teacher can give us more opportunities for us to do more flexible consolidation training, which can be a useful tool to consolidate grammar rules." Another one claimed that: "I'm content with it, too. This method is really helpful for learning grammar and I hope the teacher can present more language materials to help us understand grammar better." However, there was a student's response that attract the attention of the researcher. She said: "My English is poor all the time. Guided discovery method is not very helpful to me. I was not interested when the teacher let us find the grammar rules by ourselves. I thought it might be because my English was not good all the time and it's hard for me to understand the teacher's tasks in class."

The fourth question was to see if students have any suggestions for the guided discovery method, so as to make the grammar teaching more efficient. Two students suggested that more authentic language materials in context should be presented. One student figured out that: "Sometimes I don't know how

to understand these example sentences in the absence of context. I hope you can give us some advice on how to find more language materials when we study by ourselves.” Another student pointed out that: “The teacher guides us to think by asking some problems. But the vital thing is that these questions should not be the same. In my opinion, these guided questions should be based on the level of different groups to properly design it.” The other three students’ suggestion is that: “The grouping of each group should consider students’ English level, their interest, and some other factors. In this way, each group is more united, and the effect of learning will be better.”

All in all, from the result of the interview, it can be concluded that the guided discovery method has many merits in English grammar teaching, which can evoke most students’ English grammar learning interest, initiative, and improve their grammar learning competence.

5.2 Discussion

Guided discovery method is the “lubricant” of English grammar teaching. In English grammar class, teachers use guided discovery method consciously is what students expect. In addition, the use of guided discovery method in grammar class can stimulate students’ interest and motivation to learn grammar, and exert an irreplaceable function in the active participation of students in grammar teaching. The author conducts discussion from three aspects.

5.2.1 Improving Students’ Interest in Grammar Learning

Guided discovery method can improve students’ interest in grammar learning. More than 60% of students believe that grammar is important and that they are interested in learning grammar, and 69.35% of students think that learning grammar well will give them a sense of success and superiority. Through the interviews, all five students were accepted the current model of grammar instruction, and they felt that their interest and motivation in learning grammar have enhanced. The above data demonstrate that under the mode of using the guided discovery method to teach grammar, students are paying more attention to grammar, and their willingness to learn grammar is stronger, and more and more students are aware of the importance of grammar learning. Second, using the guided discovery method can facilitate students’ internalization of the target language. Students gain a sense of success when they engage in grammar discussions and sharing, and this sense of success makes them feel superior and makes them eager to try out new problems and more interested in learning grammar. The guided discovery approach not only reduces the feeling of boring and unaccompanied when learning grammar, but also allows students to enjoy working with other students to solve problems. The guided discovery method focuses on creating a context for grammar learning. Students’ learning grammar is a process of active exploration and application in the context. A vivid context can enrich the interest of students in grammar learning, attract students’ attention and increase their participation in the classroom, which greatly stimulates students’ desire to learn grammar.

5.2.2 Increasing Students’ Autonomy in Grammar Learning

Guided discovery method helps to increase students’ autonomy in learning. 63.6% of the students can take the initiative to learn grammar and complete the homework assigned by the teacher, 42.34% of the

students can take the initiative to review what they have learned, and 59.13% of the students can pay attention to summarize the successful experience of learning English grammar. Through the interviews, students also believed that the learning of grammar should not just rely on the teacher's teaching, but should discover by themselves. The above data reveal that under the mode of guided discovery method, students' autonomy in grammar learning is increased. The reason for this is that in the classroom where the guided discovery is applied, students are the protagonists of the classroom, and they are no longer just waiting for the teacher to impart grammar knowledge, but they are guided by the teacher and their peers through cooperative discussion, thinking, and analysis of the target language grammar, and their learning process become more active. In the process of active exploration of grammar rules, students' thinking and learning abilities can be enhanced. Under the diversified learning activities, students cooperate to actively explore and discover rules, meanings and usages of grammar, which not only helps student master grammar knowledge but also use knowledge autonomously. Students' sense of unity and collective honor also have formed to some extended.

5.2.3 Cultivating Students' Grammar Learning Strategies

Third, the guided discovery method helps to cultivate students' grammar learning strategies. At the same time, students' comprehensive language ability has also been developed accordingly. About 59,13% of the students learned to analyze and solve grammar problems by means of reasoning and induction, and about 49,64% of the students were able to evaluate their grammar learning effects and summarize their grammar learning methods. Through the interviews, students also revealed that they were able to discover and summarize simple grammar rules at the current learning stage. The above data demonstrate that in a classroom where the guided discovery method is applied, teachers focus on developing students' independent thinking skills, and let them analyzing grammar rules on their own. Students learning autonomy and thinking skills are developed during the process of analyzing grammar by themselves. So that they can analyze and solve grammar problems through reasoning and induction instead of just relying on the teacher when they encounter difficult problems. In listening, the mastery of grammar can help students can quickly identify the relationship between continuity and transition, locate the interpretation direction of audio language, and finally improve students' listening comprehension ability. In oral expression, the mastery of grammar can help students to correctly use tense to express the object state, correctly use the subjunctive mood to accurately express the degree of probability questions, and finally improve students' oral expression ability. In reading English articles, the mastery of grammar can help students analyze long and difficult sentences, grasp the main idea, so as to understand the meaning of sentences, improve the quality of reading comprehension, and ultimately improve students' reading comprehension ability. In writing, the mastery of grammar knowledge can help students choose words and make sentences probably, and finally improve their writing level. It can be seen that the mastery of grammar affects the development of students' listening, speaking, reading and writing skills. Therefore, when the guided discovery method is applied in English grammar class, it can promote the formation of students' grammar learning strategies, and then

elevate students' comprehensive language application ability.

6. Conclusion

6.1 Major Findings

The purpose of the study was to examine the effectiveness of the guided discovery method applied in Minda middle school and to identify the problems of the method through questionnaires and interviews, so as to improve the efficiency of English grammar teaching in the school. The main findings of this study are as follow:

First, teaching grammar by the guided discovery method is conducive to increasing students' interest in grammar learning. The results of the questionnaires and interviews reflect that most students were aware of the importance of learning grammar and had a clearer motivation to learn grammar, i.e., to learn English well and to be interested in grammar. They believe that learning grammar well can give them a sense of fulfillment and superiority, and then increase their self-confidence in learning grammar. Second, teaching grammar with the guided discovery method can improve students' learning autonomy. Under the teaching of the guided discovery method, students realize that knowledge should not just rely on the teacher's explanation and direct impart, but should be discovered by students themselves. The dependency of English grammar learning has been improved to a certain extent. Most students are able to actively engage in classroom activities and take the initiative to complete the grammar learning tasks assigned by the teacher. Many students have developed good habits of pre-reading before class, reviewing after class, and summarizing and reflecting their learning process.

Third, using the guided discovery method to teach grammar can cultivate students strategies for learning grammar. Many students are able to pay attention to the successful experience of learning English grammar and learn to analyze and solve grammar problems through inference and induction, and regularly evaluate their learning effectiveness.

Finally, there are some problems when the guided discovery method was applied. Some students still think that their grammar learning ability had not improved. Students with low learning levels may find it difficult to analyze and summarize grammar by themselves. The guided questions do not base on the level of different groups, so students with low learning ability cannot understand it.

6.2 Deficiencies in Research

This study is limited by personal ability, and there are still some areas for improvement, which are mainly reflected in: Limitations of the study scope. The study was conducted among 137 students in Grade 8 Class 2, Grade 8 Class 3 and Grade 8 Class 4 of Nanning Hi-Tech Industrial Development Zone Minda middle school, without conducting teaching experiments with students from other schools. Owing to limitations in research conditions, the sample studied is not sufficient and representative.

As the time-constrained and space constraints, the author only interview five students. In addition, due to the limited capacity for the author, the research is not comprehensive and still need to be further

improved. At the same time, the method of data processing is too traditional. If the data can be processed by the results of modern technology, the survey results will be more scientific.

6.3 Suggestions for Further Study

On the basis of the above limitations, the following suggestions are put forward to provide some ideas for further research. Teacher should pay more time and energy to grasping and understanding the theoretical knowledge of the guided discovery method, so as to provide better teaching practice. What's more, the study period can be extended longer. In order to make the research more sufficiently and deeply, the period of research in the future should be extend, with more round of research.

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