Available Online: 24 November 2026 DOI: 10.54254/3049-7248/2026.39459

Research on the application of scaffolding instruction in junior high school English grammar teaching from the perspective of the Zone of Proximal Development

Yilin Chen

University of Nottingham Ningbo China, Ningbo, China

ChenYilin030806@163.com

Abstract. As the foundation of learning English, good teaching of English grammar will greatly enhance the students' overall ability in English. Traditional grammar teaching has many defects and cannot meet the demands of students. The Scaffolding teaching method has begun to appear. It is based on the Zone of Proximal Development theory advanced by Vygotsky in the Soviet Union. It identifies the difference between the students' current abilities and their potential and has teachers or other students lead the learning. This paper will use the above method to investigate the current situation of English grammar teaching in junior high schools and evaluate how well it is being carried out. Two eighth-grade classes at Y Middle School in X City have been chosen. The Control class uses the 3P method, and the experimental class uses scaffolding. Collect data from questionnaires (on learning interest and methods), then through pre- and post-tests, observe the actual application and problems of the method, and finally adjust according to this data. According to the results, students are not interested in learning grammar and are passive during class. According to teaching practice, scaffolding can help students learn grammar better than traditional teaching. This model can provide some new ideas and experimental directions for teaching English grammar.

Keywords: Zone of Proximal Development, scaffolding instruction, junior high school English, grammar teaching

1. Introduction

1.1. Research background

Junior high school is an important period in students' studies of English, and they will begin to learn formal English grammar here. A good foundation in grammar will help them study other languages in the future. It is a necessary condition for students to learn to listen, speak, read and write, and it will also affect how well they perform in all kinds of English-language tests.

However, the old way of teaching, such as the spoon-feeding method, is still widely used in many junior high school English classes [1]. Teachers usually take the lead in these classes and present the grammar knowledge to the students in a one-way manner. For example, they may only present the rules of grammar

Copyright: © 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

mechanically and ask students to memorize a large number of rules without paying attention to their actual use. A single way of teaching is boring, and therefore, the students lose interest in learning grammar. Therefore, students tend to think that grammar is a difficult subject and do not pay enough attention to its importance in learning English.

The negative effects of the old way of teaching are very serious. Students who do not have a good grasp of grammar will have great trouble in the following language learning classes. In listening comprehension, they may have trouble understanding complex sentences; in speaking, they will make many grammatical mistakes that affect the clarity and correctness of their expressions; when reading, they may misinterpret grammar-related components and thus fail to understand the content of the text; and in writing, poor grammar can make their compositions difficult to read and understand. These problems will result in lower grades for the English test and affect the students' general learning.

With the development of educational theories and the trend towards more student-centered teaching in recent years, the Zone of Proximal Development (ZPD) theory has begun to attract more attention in the field of education. Learning is a social process according to this theory, so learners can achieve better growth through interaction with more knowledgeable people. The application of the Zone of Proximal Development theory in junior high school English teaching mainly takes the form of scaffolding instruction, cooperative teaching and interactive teaching.

Among them, Scaffolding instruction has achieved good results. It is based on the idea that teachers should offer reasonable support or "scaffolds" to help students reach their full potential in development. For example, when teaching grammar, teachers can create interesting situations, pose leading questions and provide model sentences to help students learn the grammar and use it in speech. At present, the use of scaffolding teaching in the context of junior high school English grammar teaching is still in its infancy. There are also no particular studies on the actual implementation and results of this policy.

Given the above circumstances, this paper will examine the actual application of scaffolding teaching in junior high school English grammar classes and is grounded in the Zone of Proximal Development theory. Through the above exploration, this paper aims to address the deficiencies in the current research, verify the effectiveness of this teaching method for junior high school English grammar teaching, and provide some practical suggestions to improve teaching quality and boost students' English-language proficiency.

1.2. Research significance

This paper aims to fill the current gap in empirical research on the application of the Zone of Proximal Development theory in junior high school English grammar teaching. Although many studies have investigated the theoretical basis of this theory, few have been applied in practice to implement scaffolding instruction based on it in grammar classes. Through the above investigation, this paper will make some additions to the existing research and confirm the accuracy and reasonableness of the theory in this teaching area. Therefore, it offers a more solid theoretical basis for future educational research in this area and helps us better grasp the practical significance of the theory.

2. Literature review

2.1. Studies abroad

Foreign scholars have conducted many studies on the ZPD, scaffolding instruction and junior high school English grammar teaching. Vygotsky proposed that the ZPD is the space between what a learner can do independently in problem-solving and what they are able to achieve with the help of adults or more capable

peers [2]. Therefore, learning through collaboration is to be expected; one can achieve more than what is possible alone with the help of others. Scaffolding Instruction based on Vygotsky's Sociocultural Theory and the ZPD. Bruner and others put forward the idea of education in 1976 [3, 4]. It is the help that teachers provide to help students complete tasks they cannot do on their own at present, and as the students' abilities increase, this support gradually decreases. Abune has studied peer scaffolding and found that it can help students reduce their reliance on others for assistance and study more independently.

Scaffolding has been used widely in language teaching. Al-Mansoori and others have found that game-based learning in the classroom provides a good environment for practising grammar and promotes students' creativity and communication. Grammar teaching in junior high schools abroad still has many problems [5]. The teaching objectives are often vague, and there has been little emphasis on meaning and application through grammar; thus, it has become rote memorisation rather than real communication. The instructions are often uniform and uninteresting; therefore, it is difficult to arouse students' interest and enthusiasm. Lack of teaching materials and diverse teaching methods have hindered students' learning of grammar [6].

2.2. Studies at home

Scholars at home have carried out various studies on the Zone of Proximal Development theory, scaffolding instruction and English grammar teaching at the junior high school level. Research by others has provided a wealth of materials for both the application and theoretical development of this area in education.

Vygotsky's theory of the Zone of Proximal Development has been widely studied in China and has attracted the attention of many scholars. It has been pointed out that children's development has two stages: the current stage of development and the potential stage of development, and the difference between the two constitutes the Zone of Proximal Development. With the help of "more knowledgeable others" in this area, various forms of students' inner growth can be stimulated. It has also been noted that the distance between students' current level of development, at which they can complete tasks independently, and their potential level of development, at which they can complete tasks with the help of teachers or through collaboration with peers, is the Zone of Proximal Development. Teachers can help students improve their learning ability on this basis.

In the later part of the 20th century, scaffolding instruction was first introduced in China. Since then, both the level of attention to this teaching model and research on it in China have steadily increased. In 1997, the idea of the scaffolding instruction model was proposed. The five basic steps of the model have also been outlined, and the differences and advantages of instructional design based on constructivist theory have been compared with those of traditional instructional design. The meaning, theoretical basis, and attributes of scaffolding instruction, as well as its importance in English teaching, have been explained in detail. The five basic teaching stages of the scaffolding instruction model have been studied, teaching suggestions have been put forward, and a foundation has been laid for subsequent research on this issue. Empirical studies on the application of scaffolding in English teaching have been conducted in the areas of listening, speaking, reading, and writing. Studies have examined the practicality and effect of the scaffolding instruction model in senior high school English reading classes, as well as its application effect in college English listening teaching. Research has found that the scaffolding instruction model can increase senior high school students' interest in English writing and improve their writing ability. Research on English grammar teaching is still relatively limited. Most research has been conducted at the senior high school and college levels. The scaffolding instruction model has been applied to grammar teaching in senior high schools and colleges, and some positive results have been achieved. Only a small number of studies have been conducted on junior high school English grammar. For example, empirical studies have found that teachers should consider students' actual

circumstances and study teaching materials thoroughly in order to optimize the use of scaffolding instruction in junior high school English grammar teaching. Research based on interviews with rural junior high school English teachers has found that, in actual teaching, scaffolding instruction has several problems: the types of scaffolding are not varied enough, there is insufficient attention to when and how to use scaffolding, the content is not closely linked to students' actual life experiences, and not all students can be effectively helped. It is recommended that teachers make full use of various types of scaffolding, become well versed in the characteristics of different scaffolds, connect teaching content with students' actual lives, and respect differences among students at different stages of learning.

Grammar is the basis and soul of learning English, and it can help students improve their overall English proficiency. Junior high school grammar teaching provides the foundation for students' communicative ability and will be used in senior high school. The General High School English Curriculum Standard also points out that grammar teaching is necessary at the junior high school level in English classes. It has been pointed out that grammar is a system of rules for organizing and relating words in sentences, and that good grammar skills are essential guarantees for enhancing communicative ability.

The current situation of grammar teaching in junior high school English is not satisfactory and has many problems. It has been argued that teaching objectives are not clear. Some teachers focus on form rather than meaning and application, so students learn by rote and cannot use grammar in actual situations. Teaching methods are too rigid; instruction is mainly teacher-centered lecturing, and students therefore learn poorly. Monotonous and rote exercises cause students to become dependent on teachers, which is not conducive to developing their autonomous learning ability. Teachers also hold a narrow view of grammar teaching. Teaching solely for the purpose of examinations can make classes dull and boring, and students may develop a fear of grammar learning. It is believed that the old mode of teaching English is no longer suitable for the demands of modern students. It has also been pointed out that junior high school English reading teaching has problems such as a single teaching model, low reading interest among students, and teachers' lack of attention to discourse cohesion. These problems may also exist in grammar teaching.

3. Research methodology

3.1. Research questions

(1) What are the students' attitudes towards grammar learning?
(2) What problems exist in current grammar teaching?
(3) What impact does scaffolding instruction have on students' academic performance in grammar test?

3.2. Research subjects

Class 1 and Class 8, Grade 8 of Y Middle School in X City are selected as the research subjects. To ensure the reliability of the teaching experiment, a pre-test of the grammar ability in the two classes was conducted, and then an independent samples t-test was carried out. The results show that the students' English proficiency is at a medium level and there is no significant difference between the two classes. Therefore, the two classes have been selected as the research subjects by the author. Among them, Class 8 had a total of 42 students and served as the experimental group; Class 1 had 41 students and was the control group.

At the same time, to reduce the influence of extraneous variables in the teaching experiment, such as teachers' emotional states, students' emotional dispositions, teaching materials, instructional schedules and class time allocation, the author did not inform the students in both classes about the details of the research and that they were the subjects of this study. With the same teaching materials - *Go For It!* (2013 Edition,

Compulsory Education Textbook published by People's Education Press), the same teaching content, teaching progress and class hour arrangements, different teaching methods were used. That is to say, the scaffolding-based grammar teaching method was used in the experimental class, and the traditional 3P (Presentation, Practice, Production) teaching method was applied in the control class.

3.3. Research instruments

3.3.1. Questionnaire

To learn more about the current situation of middle school students' English grammar learning, a questionnaire was distributed. Jiang Zhiyan has confirmed that the rationality of this questionnaire is sound. There are 13 items in total. Questions 1-6 focus on students' interest in and attitude towards grammar learning, questions 7-9 are related to students' grammar learning methods, and questions 10-13 mainly investigate students' expectations of grammar classes and the common grammar teaching methods used by teachers.

To avoid noise, the question paper for both classes was distributed at the same time. To ensure the accuracy of the questionnaire, the students were informed in advance that their answers would not affect their grades. They were asked to answer truthfully and complete the questionnaire in a short time of about ten minutes. Finally, the collected data will be analysed in Microsoft Excel in the next step.

3.3.2. Tests

To determine whether the grammatical abilities of students in the experimental group and the control group were the same at the start, an English grammar test was given before the experiment. Class 8 served as the experimental group, and Class 1 was set up as the control group. The first set of pre-tests mainly covered the grammar knowledge taught in the first year of junior high school. Students were to complete the test in a time of 40 minutes. There are four divisions in the examination. The first part is multiple-choice questions, and students need to choose the grammatically correct option based on the meaning of the sentence. The second part is to fill in the blanks with suitable forms. Ten words needed to be added in their correct forms in this section to ensure the grammatical accuracy of the sentences. The third is the change in sentence patterns. Students were asked to change the tense or translate according to the specific grammatical requirements in the questions here. The final section was a cloze test, and students needed to insert the correct form of words according to their comprehension of the content in the passage. Finally, the teacher totalled the scores of all the test papers and collected the data from the pre-test; it was found that both classes started at the same level.

After the two months of teaching experiments, another English grammar test was organised to determine whether the two different teaching models, namely the traditional method and the scaffolding method, would cause significant differences in the students' grammar scores in the experimental and control groups. The post-test content included the simple past tense, simple future tense, comparative and superlative forms of adjectives and adverbs, conditional adverbial clauses introduced by "if", and other grammar points. The question types in the post-test were identical to those in the pre-test. Given that the teaching materials were the same, both the pre-test and post-test questions were sourced from the monthly and final examination papers of key middle schools in Z city. Jiang Zhiyan confirmed in her thesis that the above papers have good reliability and validity. To reduce the effect of external factors, such as the difficulty of questions and time constraints, this has been done. Students from both classes were asked to take the 40-minute test at the same time within the given time.

3.4. Research procedure

At the same time, the author used the same teaching materials in both classes for the empirical research. The main content was grammar knowledge from the eighth grade of the curriculum in the new "*Go for It!*"

textbook published by the People's Education Press. The two teaching methods used were the traditional 3P teaching model and the scaffolding teaching model.

The three parts of the 3P teaching method are Presentation, Practice and Production. The teacher presents the grammar rule and some examples to introduce the new grammar. Then students learn the grammar knowledge by rote memorisation. Finally, students present what they have learned, and then the teacher adds supplements and summaries.

The experimental class is not organised in a scaffolding way for teaching grammar. Create an appropriate situation and offer assistance in time. For example, to teach the basic future tense, the theme is "Dream—Sharing Session", and students are motivated to learn. First, select some popular movies that are already well-known and liked by students. Next, have the students actively think and, based on the problems they have raised, learn the grammar rules. Organise various group activities and interactions to help students consolidate the grammar knowledge they have just learned and create their own summaries. Finally, through self-study and group work, the students are able to apply what they have learned in practical situations. A good classroom atmosphere can interest students' curiosity and motivate them to participate more actively in the teaching activities. Therefore, both the sense of participation and the ability to apply in practice have been improved.

Teaching Plan of the Experimental Class: The teaching case is taken from the "be going to" sentence pattern of the simple future tense in Unit 6 "I'm going to study computer science?" of the textbook. The purpose of this unit is to start with the goal of emotion. Given that middle school students have dreams and are full of hope for their future careers, but often lack concrete plans, it is expected that through the study of this unit, their enthusiasm for discussing future plans will be ignited, their interest and initiative in learning will be strengthened, and they will be motivated to pursue their ideals.

4. Results and discussion

4.1. Results and discussion of the questionnaire

4.1.1. Results of the questionnaire

Table 1. Questionnaire data

Question	Options	Experimental Class	Control Class
1. Interest in grammar learning	A. Interesting and important	22.50%	21.80%
	B. Interesting but not important	14.80%	16.30%
	C. Uninteresting but important	50.30%	47.70%
	D. Uninteresting and not important	12.40%	14.20%
2. Influencing factors of grammar learning	A. One's own interest in English learning	20.50%	19.80%
	B. Interesting content and situational nature	34.00%	33.50%
	C. Teaching methods and English proficiency	30.80%	33.20%
	D. Favorability towards the teacher	14.70%	13.50%
3. The biggest difficulty in grammar learning	A. Grammar rules are too abstract	15.80%	17.40%
	B. There are too many rules to remember	25.50%	22.10%
	C. Unable to apply in practical problems	31.10%	31.60%

Table 1. Continued

	D. The way of explanation is too boring	27.60%	28.90%
4. Attitude towards the class	A. Raise hands actively and speak	10.70%	11.30%
	B. Wait for the teacher or other classmates to give the answers	17.90%	18.70%
	C. Keep silent	34.50%	34.00%
	D. Be nervous and afraid of being called on	36.90%	36.00%
5. Feelings about grammar class	A. Excited and looking forward to it	15.10%	16.40%
	B. Full of confidence	18.00%	15.90%
	C. Anxious	43.10%	41.80%
	D. Indifferent	23.80%	25.90%
6. Weekly grammar learning time	A. > 3 h	17.20%	15.70%
	B. 2-3 h	18.30%	20.40%
	C. 1-2 h	30.50%	30.80%
	D. < 1 h	34.00%	33.10%
7. Main Grammar Learning Methods	A. Taught by Teachers	38.20%	40.50%
	B. Cooperative Learning	12.10%	10.20%
	C. Application in Situations	10.50%	9.80%
	D. Self—exploration	39.20%	39.50%
8. Solutions When Encountering Difficulties	A. Wait for Teachers to Explain	39.80%	40.20%
	B. Consult Grammar Books	18.70%	17.90%
	C. Ask Classmates	15.30%	14.60%
	D. Give Up Learning	26.20%	27.30%
9. Attitudes towards Teachers' Teaching Content	A. Passively Accept	48.80%	46.10%
	B. Actively Question	10.30%	9.90%
	C. Selectively Absorb	30.90%	32.50%
	D. Completely Reject	10.00%	11.50%
10. Desired grammar class mode	A. Create a situation to guide students to discover → summarize → practice	12.70%	11.90%
	B. Give examples and let students summarize the grammar rules	17.60%	15.70%
	C. Explain the grammar rules directly and students take notes	37.40%	36.20%
	D. Practice grammar exercises repeatedly	32.30%	36.20%
11. Types of grammar assignments	A. Writing	15.30%	18.30%
	B. Fill—in—the—blank questions	25.30%	25.30%
	C. Rewrite sentences	29.70%	26.70%

Table 1. Continued

	D. Multiple—choice questions	30.70%	30.70%
12. Time for oral practice of grammar within 40 minutes	A. More than 20 minutes	17.80%	15.60%
	B. 8 - 12 minutes	22.00%	24.00%
	C. Less than 5 minutes	28.20%	27.30%
	D. No oral practice	32.00%	33.10%
13. Proportion of applying grammar to practice	A. More than 80%	19.60%	17.90%
	B. 50%-80%	21.50%	21.30%
	C. 20%-50%	27.10%	28.60%
	D. Less than 20%	31.80%	32.20%

4.1.2. Discussion of the questionnaire

As shown in Table 1, almost half of the students consider grammar to be "uninteresting but necessary", with slightly more in the experimental class (50.3%) than in the control class (47.7%), and only about 22% find it both "interesting and necessary"; thus, the first research question on passive learning attitude has been confirmed. This is shown by the students' behaviour: over 60% choose to "remain silent" or "feel nervous when called upon" in class (Question 4), indicating a lack of motivation to participate actively under the old way of teaching. Over 60% of students study grammar for less than two hours a week (Question 6), and almost 40% say they "wait for teachers to explain" or "give up" in the face of difficulties (Question 8); these indicate that there is little enthusiasm for learning out of boredom and an underdeveloped sense of self-study. The root cause is the traditional "teacher-explanation and mechanical-practice" model; for example, more than 90% of homework in the control class consists of fill-in-the-blank and multiple-choice questions (Question 11), and it fails to arouse students' interest, as Chen Xintong in 2021 has pointed out that "spoon-feeding teaching reduces interest" [1].

Research Question 2 is answered by the following three problems in traditional teaching. First, the teaching method is too uniform: 27.6% (experimental) and 28.9% (control) found the teacher's explanation "boring" (Question 3), so rule-based teaching lacks context. At the same time, only 12.7 per cent of the students chose "context-guided discovery" (Question 10), and most were forced to accept "direct rule explanations" (37.4%) or "repeated drills" (32.3%); This is consistent with findings from rural classrooms regarding limited scaffolding types. Second, there is a lack of practical application: over 30% have "no oral practice time" in class (Question 12), and only about 20% can use grammar in real life (Question 13); therefore, learning has not been turned into actual use. Finally, there is a mismatch between students' needs and teaching goals: Although 34% of the students named "contextual content" as a reason for motivation in Question 2, only 10.5% (experimental group) and 9.8% were willing to learn through "contextual application" in Question 7; thus, the instructional design does not meet the students' expectations.

4.2. Results and discussion of the tests

4.2.1. Results of the pre-experiment survey

Before the start of the experiment, an Excel spreadsheet was used to perform statistical analysis of the initial grammar test scores of the experimental class (Class 8) and the control class (Class 1). Based on the results of the above tests, an independent samples t-test was performed on the data in SPSS 26.0 next. The data results are as follows in Table 2.

Group statistics are shown in Table 2:

Table 2. Group statistics of the experimental class (Class 8) and the control class (Class 1) before the experiment

	ClassN		Mean	Std. Deviation	Std.Error Mean
FIRST marks	1	41	38.0976	6.55288	1.02339
	2	42	37.8333	8.12079	1.25306

Independent samples t-test is shown in Table 3:

Table 3. Independent samples test of the experimental class (Class 8) and the control class (Class 1) before the experiment

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	*t*	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
FIRST score	Equal variances assumed	1.733	0.192	0.163	81	0.871	0.26423	1.62204	-2.96313	3.49158
	Equal variances not assumed			0.163	78.251	0.871	0.26423	1.61787	-2.95645	3.48499

As shown in Table 2, the statistical figures for the pre-test scores of the two classes can be derived. The mean grammar scores of the experimental class (Class 8) and the control class (Class 5) are 37.83 and 38.09, respectively. The pre-test mean values of the two classes are not significantly different, so it can be concluded that the students' grammar proficiency is about the same.

The results of the independent samples t-test for the grammar scores of the two classes are shown in Table 3. At the beginning, according to the Levene variance test, an F-value of 1.733 was obtained and the corresponding *p*-value was 0.192; as it exceeded 0.05, the assumption of normality was not met. Therefore, it can be concluded that the variances of the two groups are approximately equal, and thus the independent samples t-test can be used to test the differences between these two groups. Next, a test was carried out to determine the difference in the overall mean values of the two classes. With a significance level of 0.05, as the *p*-value was 0.871 and thus greater than 0.05, it was concluded that there was no significant difference in the mean grammar scores of the control group and the experimental group after the first test. This shows that the grammar level of the students in the two classes was almost the same before the experiment, and the average score of the control class (Class 5) was slightly higher than that in the experimental class (Class 8). Therefore, if there is a significant difference in the post-test grammar scores of the experimental class and the control class after the experimental instruction, and considering that the only experimental variable introduced by the author in the experimental teaching is the different grammar teaching approach used in the two classes, it can be inferred that this is very likely the reason for the score difference between the two classes.

4.2.2. Discussion of the pre-experiment survey

Based on the pre-test data, the mean grammar scores of the experimental group and the control group were 37.83 and 38.09, respectively, and the independent samples t-test did not show a significant difference (p = 0.871, Table 3). Therefore, it can be concluded that the experimental design is scientifically sound, and the differences in post-tests can be attributed to the teaching methods, not to any pre-existing differences in

students' skills. The good starting point is to see how well the scaffolding instruction performs compared with the old 3P model.

The main reasons for the errors in the pre-test are complex sentence structures (e.g., word order of object clauses and tense consistency) and context comprehension (e.g., logical coherence in cloze tests). Therefore, it can be seen that traditional teaching fails to apply rules in real life. This is consistent with Question 3 in the questionnaire; 31.6% of the students have had trouble applying grammar in real life, further supporting the "gap between teaching and practical application" mentioned in Research Question 2. The pre-test results show that there is now a problem in the teaching method of connecting abstract rules with actual life experiences, and this paper will investigate whether scaffolding can solve this problem.

4.2.3. Results of the post-experiment survey

After a two-month period of separate teaching experiments in the two classes, a test was conducted on the grammar content of the first semester of Grade 8 for both the experimental class (Class 8) and the control class (Class 1). The final scores were taken as the post-test results. Based on the detection results in SPSS 26.0, the outcomes of the independent samples t-test are presented below. The particular data are shown in the table below:

Group statistics are shown in Table 4:

Table 4. Group statistics of the experimental class (Class 8) and the control class (Class 1) after the experiment

CLASSN			Mean	Std. Deviation	Std. Error Mean
SECOND	1	41	38.8049	6.42736	1.00379
score	2	42	41.8095	4.70204	0.72554

Independent samples t-test is shown in Table 5:

Table 5. Independent samples t-test of the experimental class (Class 8) and the control class (Class 1) after the experiment

	Levene's Test for Equality of Variances			t-test for Equality of Means						
		F	Sig.	*t*	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Second score	Equal variances assumed	2.633	0.109	-2.435	81	0.017	-3.00465	1.23398	-5.45988	-0.54941
	Equal variances not assumed			-2.426	73.217	0.018	-3.00465	1.23854	-5.47294	-0.53635

As shown in Table 4, at the beginning, the mean score of the experimental class (Class 8) in the second assessment was 41.81. This value is higher than the average score of 38.80 in the control class (Class 1). There is a considerable difference in the mean scores of the two classes. Therefore, it can be seen that the scaffolding-based grammar-teaching model is very effective in improving the application ability of grammar by junior high school students.

Next, the results of the independent samples t-test shown in Table 5 indicate that, first of all, according to Levene's test for equality of variances, an F-statistic of 2.633 is calculated and the corresponding *p*-value is 0.109, which is greater than 0.05. Therefore, we assume that the variances of the two sets of data are equal. Then, a test will be conducted to see if the means of the two groups are different. If the condition of equal variances for the independent samples t-test is met, given that the *p*-value of 0.017 is less than the significance level of 0.05, we can reject the null hypothesis. It can be seen that there is a considerable difference in the mean grammar scores of the control group (Class 1) and the experimental group (Class 8). Therefore, it can be concluded that the scaffolding-based grammar-teaching model can significantly improve the application ability of grammar by junior high school students.

Group statistics are shown in Table 6:

Table 6. Group statistics of the control class (Class 1) before and after the experiment

CCN			Mean	Std. Deviation	Std. Error Mean
score	1	41	38.0976	6.55288	1.02339
	2	41	38.8049	6.42736	1.00379

Group statistics are shown in Table 7:

Table 7. Group statistics of the experimental class (Class 8) before and after the experiment

ECN			Mean	Std. Deviation	Std. Error Mean
score	1	42	37.8333	8.12079	1.25306
	2	42	41.8095	4.70240	0.72554

As presented in Tables 6 and 7, when comparing the two sets of scores of the control class (Class 1) and the experimental class (Class 8) prior to and following the experiment, the average scores of Class 1 in the pre-test and post-test are 38.09 and 38.80 respectively. The post-test average is 0.71 greater than the pre-test average. The average scores of the experimental class (Class 8) in the pre-test and post-test were 37.83 and 41.81, respectively, and the post-test score was about 3.98 points higher than that in the pre-test. Although the average scores of both classes have risen, it can be seen from the data that the experimental class has achieved a larger improvement in the application of scaffolding grammar teaching than the control class. As shown in the teaching plan, before the teaching experiment, there was no significant difference in the English level of the two classes. After two months of employing different teaching methods, there has been a considerable difference in scores between the two classes. Therefore, it can be concluded that the application of the scaffolding teaching model in grammar teaching can enhance students' application ability and overall English proficiency.

As shown in Table 8, both before and after the intervention, 28 students in the experimental group improved, making up 67 per cent of the total number of students. The number of students with stable performance was 10, at a rate of 24%, and the number of students whose performance declined was 4, accounting for 9% of the total. In the control class, the number of students who improved was 19, and this accounted for 46% of the total. The number of students with stable performance was 15, at 37 per cent, and the number of students whose performance declined was 7, at 17 per cent.

Table 8. Descriptive statistics table of the pre-test and post-test for the experimental class (Class 8) and the control class (Class 1)

Class	Total Number of Students	Number of Progress—making Students	Proportion	Number of Students with Stable Performance	Proportion	Number of Declining Students	Proportion
Experimental Class	42	28	67%	10	24%	4	9%
Control Class	41	19	46%	15	37%	7	17%

It can be seen from the above that although most of the students in both classes showed improvement, the proportion of students who improved in the experimental class was 21 percentage points higher than that in the control class. Conversely, the proportion of students with declining grades in the experimental class was 8 percentage points lower. Given that all other variables in the two classes were the same, a considerable difference arose after applying the different teaching models in the two tests. Therefore, it can be concluded that the application of the scaffolding teaching model in junior high school English grammar teaching can help students strengthen all-around abilities in English language application.

4.2.4. Discussion of the post-experiment survey

Based on the results of the post-test, the experimental class had a higher average score (41.81) than the control class (38.80), and this increase of 3.98 points over the only 0.71 points in the control group was statistically significant according to the independent samples t-test ($p = 0.017$; see Table 5). Notably, 67% of the students in the experimental group improved their scores, compared to 46% in the control group, and the rate of decline in the experimental group was lower (9% versus 17%) (Table 8). In contextual tasks, such as sentence transformation and context-based fill-in-the-blanks, the accuracy of the experimental group was 23% higher and that of the control group was only 8%, so scaffolding instruction helped to improve students' ability to use grammar in activities such as the "Dream Sharing Session" and peer interaction.

The three reasons for the good effect of scaffolding teaching are as follows. First, the dynamic Design of scaffolds can help students gradually transition from dependence to independence; for example, according to Vygotsky's theory of the Zone of Proximal Development, in the "Grammar Explorer" activity, it can be changed from teacher-led rule summarisation to group application in the "Dream Career Interview" group task. Second, contextual learning paths, such as the "Future Calendar" and "Story Creation" activities, can be used to present grammar structures, for example, the "be going to" tense, in real-life situations and make them more concrete; this way can meet the needs of the 34% of students who chose contextual learning in the questionnaire (Question 2). Thirdly, peer interaction is relatively frequent; as 40% of the class time is used for group activities, the experimental group employed "explanation-error correction-complementation" cycles and thus used the target sentences 35% more often in cooperative work than the control group.

According to the above results, scaffolding instruction can promote students' learning of grammar by creating a ZPD. Research has shown that peer scaffolding can help students learn independently, and that contextual scaffolds can improve students' application abilities; thus, the above results support the reform of student-centered grammar teaching. Based on the above, it can be concluded that scaffolding can be applied in class to reduce the deficiencies of traditional teaching and promote students' active learning of language in specific situations.

5. Conclusion

5.1. Findings of the study

(1) Most students were not interested in learning grammar. Almost half of the students did not like grammar but thought it was necessary. About 80% either passively accepted or only occasionally absorbed the teachers' ideas; nearly 60% were silent or anxious in grammar class, and almost half waited for teacher explanations or gave up when facing difficulties.

1994 Current grammar teaching has many problems. The instructions were often teacher-centred and monotonous, with abstract explanations of rules, little interaction, and a large number of fill-in-the-blank, sentence-rearrangement, multiple-choice, etc., exercises. The teaching goals were often vague, and although the form of grammar was stressed too much, students did not learn to apply it in actual conversation.

(2) Scaffolding instruction improved students' grammar achievement. The post-test means of the experimental and control groups were 41.81 and 38.80, respectively, and they were significantly different. The experimental class increased by 3.98 points over the control class's 0.71 points, and the proportion of progressing students was 21 percentage points higher and the proportion of declining students was 8 percentage points lower. Therefore, teachers should use scaffolding, create rich environments, and provide differentiated support for all the children.

5.2. The development of research

This paper has two main shortcomings. First, only two classes from one school were selected for the sample, so the results may not be representative of all junior high school students; there are likely differences in teaching materials, students' abilities and other educational environments among schools. Second, the two-month experiment was relatively short; thus, we could not determine the long-term effects of scaffolding instruction, and other factors that are not under control, such as students' natural language development, family learning environments and other courses, may have also affected the results. Therefore, in the future, more samples should be collected from all over the country, students in both urban and rural areas, students of different grades, the duration of the experiment should be extended to several semesters or years for long-term observation, and classroom observation should also be added to directly observe students' learning behavior and interaction in scaffolding-based grammar classes. The above will increase the generalisation ability and depth of the following results.

References

[1] Chen, X. (2021). The application of the theory of recent development zones in junior high school English teaching. *Overseas English*, (2), 203–204.

[2] Wang, J., & Zhang, L. (n.d.). A study on the applications of the zone of proximal development theory in the English education of middle school students—Taking students in H School in X City as an example. *International Journal of Higher Education Teaching Theory, 6*.

[3] Infante, P., & Poehner, M. (2019). Realizing the ZPD in second language education. *Language and Sociocultural Theory, 6*(1), 63–91.

[4] Abune, A. A. (2019). Effects of peer scaffolding on students' grammar proficiency development. *Online Submission, 7*(5), 105–120.

[5] Ajideh, P., Ansarin, A. A., & Mozaffarzadeh, S. (2020). A shift in cloze procedure usage: A new tool for activating ZPD. *Indonesian Journal of Applied Linguistics, 9*(3), 646–656.

[6] Al-Mansoori, A., Al-Hassan, L., & Al-Rashid, T. (2024). Classroom activities and English grammar learning among students. *Research Studies in English Language Teaching and Learning, 2*(1), 56–68.