

# *Students' Self-regulation Ability Evaluation Based on Micro Class English Teaching Classroom Model*

Menglin Zhang<sup>1,a,\*</sup>

<sup>1</sup>*School of International Education, Jiangsu Vocational College of Finance and Economics,  
Huai'an, Jiangsu, China*

<sup>a</sup>*19900514@jscj.edu.cn*

*\*Corresponding author*

**Keywords:** English Micro-lecture, Teaching Classroom Mode, Self-regulation Ability Assessment, Hierarchical Sorting

**Abstract:** In recent years, countries all over the world have taken cultivating students' self-regulation ability as an important goal of education, and self-regulation ability is also widely considered as an essential skill for lifelong learning. Micro class is the product of micro era, and it is of great significance to build a new teaching relationship. This paper started from the teaching characteristics of micro classes and constructed a micro class model, so as to design a micro class based English flipped classroom teaching model. Under this teaching mode, students' self-regulation ability was analyzed, and evaluation indicators were established. The evaluation indicators were omnidirectional and three-dimensional, which emphasized the comprehensive performance of students in autonomous learning. The theory was applied to practice, and the experiment was carried out to evaluate students' self-regulation ability under the micro English teaching mode. The results of the experiment showed that the number of students in the experimental class whose self-regulation ability was average after the experiment decreased from 26% before the experiment to 8%. The number of students in the experimental class whose self-regulation ability was assessed as excellent rose to 38% after the experiment, which was 16% more than the number of students in the control class whose self-regulation ability was 22%. This result showed that English teaching based on micro classes had a significant effect on improving students' self-regulation ability. The level of each dimension of students' learning increased significantly, and their learning autonomy was improved.

## 1. Introduction

In modern teaching, teachers should change their original roles to provide students with more independent space. However, when students adjust themselves, it is not just students' self-digestion, but students' responsibility for their own learning and teachers' role as partners and guides. The self-regulation ability of English learning refers to the ability of students to guide and monitor their learning and behavior through cognitive, motivational, emotional, behavioral and other cognitive factors in the process of English learning, so that students can actively adjust their learning

strategies and behaviors when they cannot achieve their English learning goals. Self-adjustment ability is not the ability to adjust learning strategies for specific English vocabulary or grammar, but the ability to help students correctly choose appropriate learning strategies according to their own actual situation in English learning. Therefore, the evaluation of students' self-regulation ability is an effective feedback means, which can help students to clarify their own learning objectives and learning content, so that teachers can choose appropriate teaching methods and teaching strategies.

Teaching is the main way to cultivate learners' self-regulated learning ability. Xiaoling S advocated that in English teaching, students should had more opportunities to learn independently, so that they could find and tap the knowledge they needed to improve their learning self-discipline [1]. McDaniel M A pointed out that the research focused of educational psychology shifted from focusing on results to focusing on self-regulation, which referred to students' correct choice and use of their own learning strategies in learning [2]. Papamitsiou Z discussed how middle school students used self-regulation strategies and control methods of beliefs in English learning, which was crucial to enhance students' English regulation ability [3]. Van Laer S research showed that self-regulated learning was not only helpful to students' current academic performance, but also significant to students' lifelong learning and growth [4]. Schwab emphasized that self-regulated learning ability was not innate, which was gradually formed and developed through long-term learning activities [5]. Therefore, this study attempted to explore the assessment of self-regulation ability from the perspective of English teaching classroom model.

However, as a new type of education, micro class is the focus of many scholars. Lu H believed that micro class was regarded as a teaching video file converted from text, images, music and other forms of slides, and its duration was usually a few minutes [6]. Zhang Z emphasized that micro classes were short and concise online teaching videos, which were often used to explain a certain knowledge point as the goal in English teaching [7]. Shi J showed that in English teaching classroom, micro classes brought different role experiences to teachers and students [8]. Liu F pointed out that for students with poor English foundation and low learning interest, the use of lively micro teaching could better attract and maintain students' attention, so as to simplify knowledge points and conform to students' cognitive rules [9]. In a word, many scholars have conducted in-depth research and analysis on the connotation of micro courses. Their overall connotation is roughly the same, but they have not yet formed a completely unified concept.

In terms of information organization, knowledge transfer, school teaching methods, etc., the integration and development of network and education has led to the development of students' individuality. In recent years, micro courses have developed rapidly from "others ask me to learn" to "want to learn" teaching methods.

## **2. Evaluation of Students' Self-regulation Ability Based on Micro Courses**

### **2.1 Micro Class Model**

#### **(1) Characteristics and types of micro courses**

Micro classes include "micro teaching plan", "micro courseware", "micro practice", "micro comment", "micro reflection" and other auxiliary teaching [10]. Suitable for online learning or mobile learning. This usually takes 3-5 minutes, and the maximum is 10 minutes. The comparison between micro course teaching and traditional course teaching is shown in Figure 1.

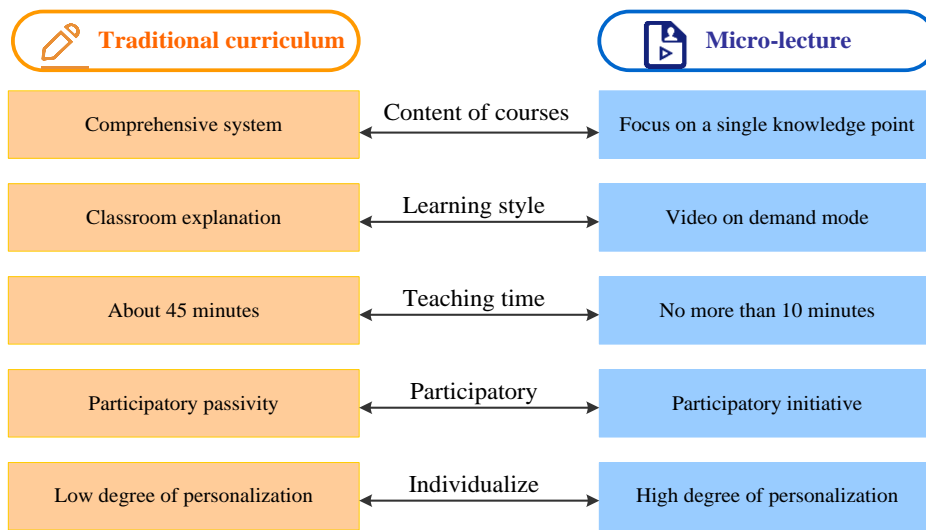


Figure 1: Comparison between micro course teaching and traditional course teaching

As shown in Figure 1, compared with traditional courses, micro courses adopt the form of video on demand, which is flexible and easy to use and to operate. At the same time, teachers' teaching time is also relatively short, and students are more active and personalized in the classroom. The storage space of micro courses is very small, which can be downloaded to computers, mobile phones and other devices for learning at any time. Through micro class teaching, teachers can complete a specific teaching link in a very short time, so as to save teaching time and guide and answer questions [11].

Although the capacity of micro class is not large, its theme is very prominent. The focus of micro class is a knowledge point, which is more targeted. Each micro lesson involves a specific problem or knowledge point. Therefore, in a series of micro classes, each micro class is independent, and students can freely choose what they want to learn and repeatedly learn and watch what they do not understand. Micro classes use teaching videos as teaching materials, which are rich in content, realistic and situational [12]. As far as teachers are concerned, micro class feedback is timely. Teachers can constantly observe their own lectures and find their own shortcomings, which are highly targeted. Compared with regular teaching, micro lesson evaluation is more objective and can provide teaching information in a timely manner. Teachers can improve their professional abilities through mutual learning and communication.

#### (2) Micro course model construction

With the continuous improvement of micro lesson teaching, a large number of representative micro lesson teaching models came into being [13-14]. In 2007, the Khan Research Institute created a short mini film with rich content and broad theme coverage. The electronic blackboard, together with the teacher's narration, makes the students refreshing and popular. The micro course teaching in Khan University has advanced modern technology and multilingual teaching. The production of micro teaching videos of Khan Academy has achieved great success and attracted worldwide attention. The "teaching" of Khan Academy is conducted from three levels: educators, teaching content design and teaching guidance; the "learning" emphasizes students' learning and teachers' teaching. Teaching designers, teachers and students are complementary to each other. While supervising the rationality of teaching content, teachers are also adjusting students' learning process [15]. Teachers are tutors of students, and students are the main body of learning. The acquisition and promotion of teachers' ability is the ultimate goal of teachers' classroom teaching.

TED-ED is a branch of Technology Entertainment Design (TED), and ED refers to education. TED-ED micro lesson teaching model aims to provide teachers and students with high-quality

video teaching resources in the form of animation and live demonstration. TED-ED micro lesson teaching model has a vivid interface and rich colors. It has refined content and clear knowledge points, which are very attractive. At the same time, the video of the micro classroom would also be accompanied by explanations and narration [16]. The TED-ED micro lesson teaching model is shown in Figure 2.

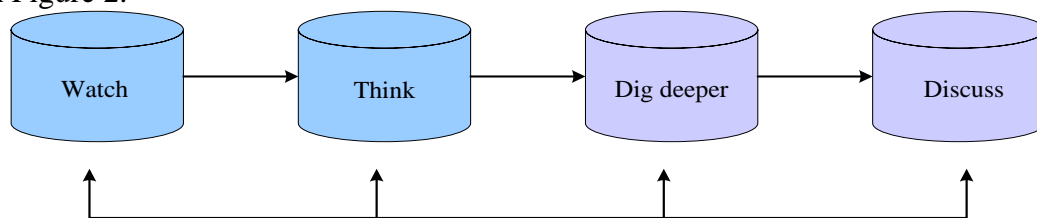


Figure 2: TED-ED micro class teaching model

As shown in Figure 2, TED-ED teaching model includes four sections: micro video, exercise thinking, deep mining and video discussion. The TED-ED teaching video is rich in content and well made. The exercise part includes question and answer. Deep mining is a more in-depth study of learning and it aims to help students with ability to better understand relevant knowledge. The discussion part is created by the video designer of micro lesson, and learners can communicate after learning.

The micro course model system structure of systematically developing teaching methods (Analysis, Design, Development, Implementation, Evaluation (hereinafter referred to as ADDIE)) is simple and clear [17].

## 2.2 English Flipped Classroom Teaching Model Based on Micro Class

### (1) The construction of teaching mode

In educational research and practice, scientific theory is the basis for ensuring the correct conduct of scientific research and teaching [18-19]. With the use of information technology and network technology, this traditional teaching method has been developed in the flipped classroom, which allows students to complete the transfer of knowledge through the guidance of teachers and the help of students in the classroom [20]. The structure of flipped classroom is shown in Figure 3.

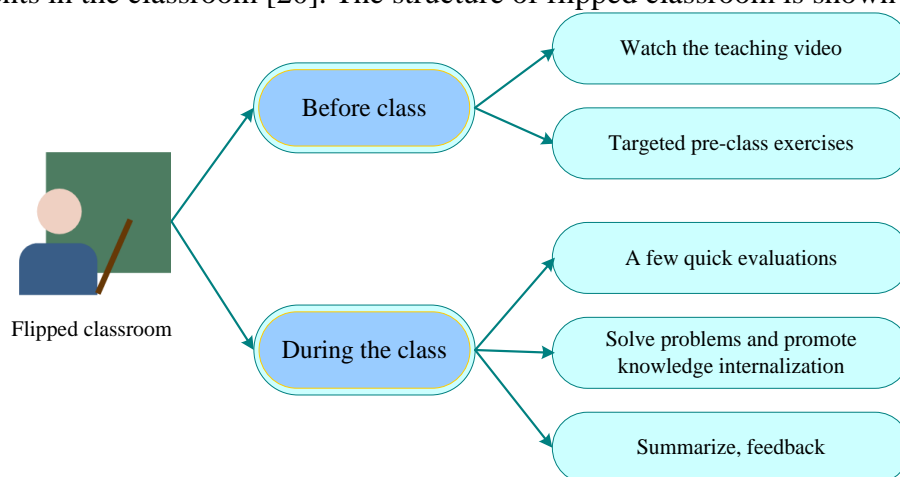


Figure 3: Flipped classroom structure

As shown in Figure 3, the first thing teachers should do in the pre class activities is to make teaching videos. Teachers can make teaching videos from two aspects: The selection of excellent open network education resources; according to the teaching content, they make their own teaching

videos.

## (2) Teaching design of English flipped classroom

If the teaching design wants to make it go on smoothly and efficiently, it must be arranged reasonably. This paper is guided by Bloom's "cognitive field" and includes two levels, namely knowledge level and cognitive level. The intersection of knowledge and cognitive process forms a series of classification tables. Therefore, objects can be placed in the square of the classification table, with emphasis on one or more grids. The teaching activities of the flipped classroom teaching model based on micro classes are greatly different from the traditional teaching activities, and it is also one of the most important features of the flipped classroom teaching model. In flipped classroom, internalization and expansion are the core of teaching activity design. The activity flow chart in flipped classroom is shown in Figure 4.

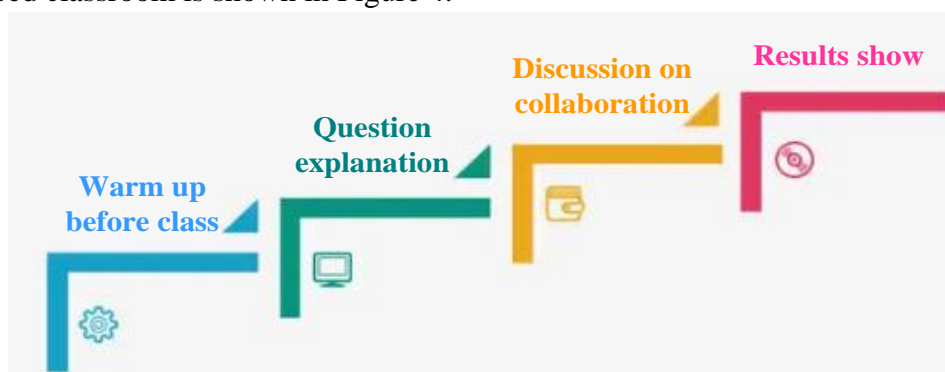


Figure 4: Flow chart of activities in flipped classroom

As shown in Figure 4, students need to prepare for new knowledge before class. After solving the existing problems, students would help each other to deepen their knowledge and establish their own cognitive structure and knowledge system. At this stage, the teacher would hand over more difficult topics and more challenging tasks to the students. The problems would be solved and completed by team cooperation. Finally, the team members would negotiate with each other to form an agreement. After the cooperation and mutual aid, the teacher would guide the students to communicate and evaluate in the group. The students summarized their work and the team's work, and selected representatives of the group to show their research results. They raised some meaningful questions on some meaningful questions, which further deepened the understanding and absorption of knowledge.

## 2.3 Evaluation Method of Self-regulation Ability

### (1) Analysis of self-regulation ability

Self-regulation is a kind of spontaneous will, behavior and thought to achieve their own goals. Autonomous learning refers to the cognition, motivation and behavior that are monitored, regulated and controlled by the characteristics of goals and situations in the learning process. Self-regulated learning refers to the active regulation of learning environment, time and other resources. It includes the control of learning objects and the regulation of learning strategies. The study found that when students encounter difficulties in reading, they can use metacognition to solve problems.

### (2) Establishment of evaluation index

In learning, students should control their own learning process. The evaluation method of self-regulation ability is not only limited to the final evaluation of learning results, but also focuses on the development of students' interests, breadth, participation, thoughts and emotions in autonomous and collaborative learning. Comprehensive and three-dimensional reflective

assessment can enable students to realize their progress and success in the learning process, thus promoting their overall development.

The weight of indicators reflects the importance of each indicator to a certain extent. This evaluation standard is based on the requirements of the end level indicators of the evaluation indicator system. It is a requirement for further specification, operability and observability of the end level indicators. The selection of self-regulation assessment indicators is shown in Table 1.

Table 1: Self-regulation ability evaluation indicators

Serial Number	Index Item
P1	Target Adjustment Ability
P2	Metacognitive Adjustment Ability
P3	Satisfactory Adjustment Ability
P4	Emotional Adjustment Ability
P5	Environmental Regulation Ability

As shown in Table 1, the selection of self-regulation assessment indicators includes goal regulation ability, metacognition regulation ability, satisfaction regulation ability, emotion regulation ability and environment regulation ability. Secondly, the analytic hierarchy process is used to define the problem and establish a judgment matrix for hierarchical sorting and consistency check. Here, the single row order of a level refers to the importance of a factor at that level. The formula for calculating the single row order of a level using the decision matrix is as follows:

$$PQ = \lambda_{\max} Q \quad (1)$$

The maximum characteristic root of the judgment matrix  $P$  is  $\lambda_{\max}$ , and the corresponding normalized characteristic vector of  $\lambda_{\max}$  is  $Q$ .

When people compare multiple factors in pairs, there may be some logical contradictions, which would affect the consistency of the judgment matrix. The consistency of the judgment matrix can be checked by the consistency coefficient  $CI$ .

$$CI = \frac{\lambda_{\max} - m}{m - 1} \quad (2)$$

If the consistency of the decision matrix is to be verified, the consistency coefficient  $CI$  of the decision matrix must be compared with the average random consistency coefficient  $RI$  of the same order to obtain the consistency ratio  $CR$ . If it is  $CR < 0.1$ , it is met; otherwise, it must be corrected accordingly.

It is assumed that a layer  $X$  contains  $n$  factors  $X_1, X_2, \dots, X_n$ . The next layer  $Y$  contains  $m$  factors  $Y_1, Y_2, \dots, Y_m$ , and their weight on  $X_a$  is  $y_{a1}, y_{a2}, \dots, y_{am}$ , so the weight of  $Y_1, Y_2, \dots, Y_m$  on  $P$  is  $v_1, v_2, \dots, v_m$ . Among them, the formula is as follows:

$$v_b = \sum_a^n x_a y_{ab}, b = 1, 2, \dots, m \quad (3)$$

The overall hierarchical sorting also needs to pass the consistency test. The algorithm of  $CI$  is as follows:

$$CI = \sum_{a=1}^n x_a CI_a \quad (4)$$

### 3. Experimental Evaluation before and after the Test

#### 3.1 Investigation and Evaluation before Test

This experiment mainly uses statistical analysis to integrate all the data, and investigates the students' self-regulation ability under the micro class based English flipped classroom teaching mode, which can roughly grasp the situation of students' English learning. In order to fully explore the situation of English self-regulation under the micro class based English classroom teaching mode, this paper would select two classes with similar academic achievements in a middle school's second year of senior high school to conduct eight weeks of micro class English teaching. Among them, there are 50 students in the experimental class and 50 students in the control class, with a total of 100 students.

First of all, the rationality of the evaluation indicators has been determined. The following is the survey on the satisfaction of the students involved in the first part of the questionnaire with the evaluation indicators, as shown in Table 2.

Table 2: Survey of students' satisfaction with the evaluation indicators

Index sequence	Very Important	Important	General	Unimportance
P1	32%	39%	25%	4%
P2	24%	37%	32%	7%
P3	31%	41%	23%	5%
P4	35%	45%	17%	3%
P5	28%	42%	26%	4%

As shown in Table 2, students believe that indicators P1, P3 and P4 can be considered as important indicators to evaluate students' self-regulation ability. The proportion of students who think these indicators are very important is 32%, 31% and 35% respectively. The proportion of students who think the three important items are 39%, 41% and 45% respectively. On the index P2, there is a big difference in the opinions of students, with 32% of the students who think it is average and 7% of the students who think it is unimportant. However, in general, this indicator is reasonable, so it can be used as an indicator of the evaluation system.

In this study, the self-regulation ability level evaluation is based on four levels: poor, average, good, and excellent. Its approximate level is determined according to the corresponding score level. The specific level division is shown in Table 3.

Table 3: Self-regulation ability grade evaluation of students in the two classes before the experiment

Score	Grade	Control Class	Experimental Class
0-50	Discrepancy	0%	2%
50-80	General	28%	26%
80-100	Good	52%	50%
100-120	Excellent	20%	22%

As shown in Table 3, the higher the score obtained by students, the stronger their self-regulation ability. A score of 80 to 100 is a good section, and a score of 100 to 120 is a good section. The number of students with self-regulation ability in the good section is the largest, with 52% in the control class and 50% in the experimental class. The proportion of students with self-regulation ability in the excellent control class is 20% and that in the experimental class is 22%. This shows that the students in these two classes have generally had good and above self-regulation ability



when learning English.

### 3.2 Evaluation of Experimental Results after Test

In teaching design, all teaching activities are student-centered. As an important research object, students should be included in the scope of key research. After eight weeks of English flipped classroom teaching based on micro classes, the specific aspects that students think micro classes have a positive impact on self-regulation ability in the experiment should be understood first. The students in the experimental class are investigated, and multiple options are available, as shown in Figure 5.

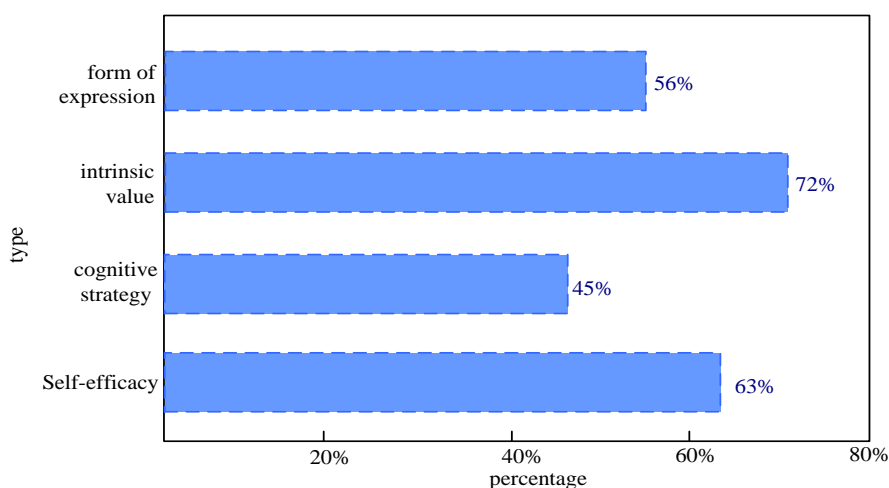


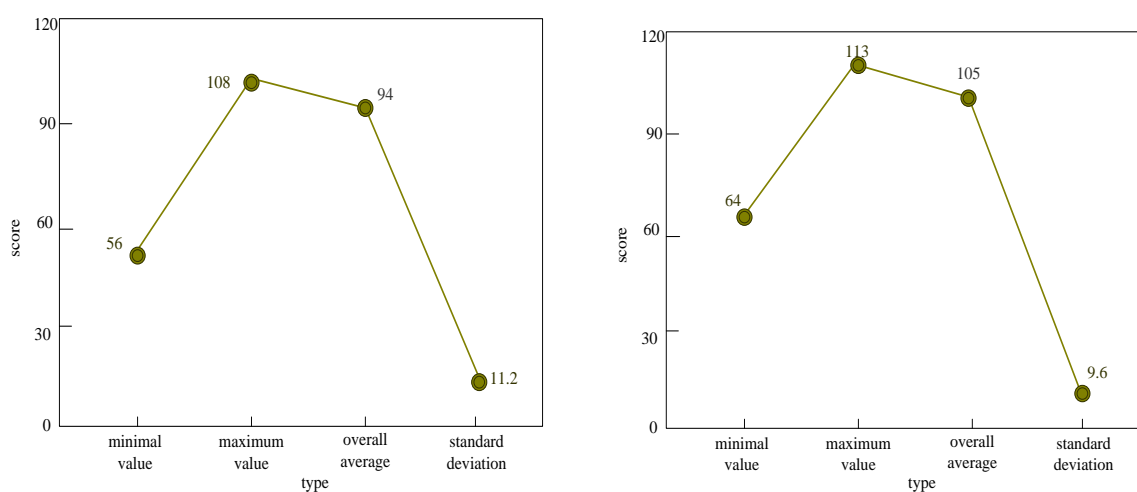
Figure 5: Statistics of the students in the experimental class that micro class teaching has a positive impact on self-regulation

As shown in Figure 5, 56% of students believe that the manifestation of micro courses has a positive effect on their self-regulation ability; 45% of the students believe that cognitive strategies stimulate self-regulation; 63% of the students think self-efficacy has a positive impact. However, 72% of the students believe that the internal value of micro class teaching improves their self-regulation ability of learning.

Secondly, for the experimental class students, the average score of self-regulation ability in the English learning process is calculated. According to the average score of each subject, the average value of self-regulation ability in overall English learning is calculated. According to the overall average value finally obtained, the self-regulation ability of the experimental class students in the English learning process is described, and the statistical results are shown in Figure 6.

As shown in Figure 6 (a), after the experiment, the minimum score of self-regulation ability of the control class students in the English learning process is 56, and the maximum is 108. The overall average value is 94, and the standard deviation is 11.2. As shown in Figure 6 (b), the minimum score of the self-regulation ability of the experimental class students in the English learning process after the experiment is 64; the maximum is 113; the standard deviation is 9.6. The overall average value is 105, which is 11 points higher than the control class. The results show that compared with the students in the experimental class before the experiment, their self-regulation ability in English learning has been greatly improved.





(a) Self-regulation ability of the control class      (b) Self-regulation ability of experimental class

Figure 6: The self-regulation ability of the control class and the experimental class in the English learning process after the experiment

## 4. Conclusions

Self-regulation ability in learning refers to the ability to motivate oneself through appropriate learning strategies. It can be regarded as a dynamic learning process or a relatively stable learning ability. Based on the characteristics and types of micro classes, this paper constructed an English flipped classroom teaching model and designed related teaching activities. It applied the theory to practice and conducted an experiment to evaluate the self-regulation ability of students in a middle school. The experimental results showed that the students' self-regulation ability in the experimental class was significantly improved under the classroom model. In English learning, students were active in their behavior. They actively constructed the relationship between new and old knowledge, and their learning efficiency was improved. In the new learning task, both students with strong self-regulation ability and ordinary students would find information related to the learning task from the existing knowledge structure, so as to get a better understanding. Compared with the past, the role of teachers also changed a lot. Teachers made students become active constructors of knowledge. Although this study has proved that the micro class based English teaching model can effectively improve students' self-regulation ability, there are still some deficiencies in the study. The number of research samples is small and the representativeness is limited, which would have a certain impact on the research results. Later research would expand the scope of samples and improve the research results.

## References

- [1] Xiaoling S. *Innovation management of English teaching in higher vocational colleges in China*. *Agro Food Industry Hi Tech*, 2017, 28(1):628-631.
- [2] McDaniel M A, Einstein G O. *Training learning strategies to promote self-regulation and transfer: The knowledge, belief, commitment, and planning framework*. *Perspectives on Psychological Science*, 2020, 15(6): 1363-1381.
- [3] Papamitsiou Z, Economides A A. *Exploring autonomous learning capacity from a self-regulated learning perspective using learning analytics*. *British Journal of Educational Technology*, 2019, 50(6): 3138-3155.
- [4] Van Laer S, Elen J. *In search of attributes that support self-regulation in blended learning environments*. *Education and Information Technologies*, 2017, 22(4): 1395-1454.
- [5] Schwab, Emily. *An Inquiry Approach to Understanding Students' Learning Goals in an Adult English for Speakers of Other Languages Classroom*. *Working Papers in Educational Linguistics (WPEL)*, 2019, 34(1):2-2.
- [6] Lu H. *Research on the advantages and application strategies of micro lecture in college English teaching*.

- Transactions on Comparative Education*, 2021, 3(2): 70-74.
- [7] Zhang Z. Personalised recommendation method of English micro-lectures teaching resources based on internet of things platform. *International Journal of Information and Communication Technology*, 2022, 20(2): 115-132.
- [8] Sujanta Kazemanzadeh. Distributed System Integrating Virtual Reality Technology in English Teaching. *Distributed Processing System*, 2022, 3(1): 62-70.
- [9] Liu F. Micro-course Contest of Foreign Languages in China: Problems and Solutions. *Adult and Higher Education*, 2020, 2(1): 1-3.
- [10] Yu L. Use Micro-Lectures to Increase Self-efficacy in English Listening. *Studies in Literature and Language*, 2020, 20(2): 63-67.
- [11] Fitria T N. Teaching English through Online Learning System During Covid 19. *Pedagogy Journal of English Language Teaching*, 2020, 8(2):138-148.
- [12] Maimaiti K. Modelling and analysis of innovative path of English teaching mode under the background of big data. *International Journal of Continuing Engineering Education and Life-long Learning*, 2019, 29(4):306-320.
- [13] Cui J. Application of deep learning and target visual detection in english vocabulary online teaching. *Journal of Intelligent and Fuzzy Systems*, 2020, 39(4):5535-5545.
- [14] Goldman S R, Hall A H. Why are we doing this? Teacher and student perspectives on literary reading. *English Teaching: Practice & Critique*, 2022, 21(1):44-56.
- [15] Tang Z. Enhancement of English autonomous learning ability of vocational college students on internet plus background. *Boletin Tecnico/Technical Bulletin*, 2017, 55(20):443-449.
- [16] Pawlak M, Kruk M, Zawodniak J. Investigating individual trajectories in experiencing boredom in the language classroom: The case of 11 Polish students of English. *Language Teaching Research*, 2022, 26(4): 598-616.
- [17] Hao K. Multimedia English teaching analysis based on deep learning speech enhancement algorithm and robust expression positioning. *Journal of Intelligent and Fuzzy Systems*, 2020, 39(3):1-13.
- [18] Harper J, Widodo H P. Perceptual mismatches in the interpretation of task-based ELT materials: a micro-evaluation of a task-based English lesson. *Innovation in Language Learning and Teaching*, 2020, 14(2): 114-132.
- [19] Goh R, Fang Y. Improving English language teaching through lesson study. *International Journal for Lesson and Learning Studies*, 2017, 6(2):135-150.
- [20] Li B. Micro-Lectures Enhance Student Engagement in Learning. *International Journal of Advanced Research and Publications*, 2019, 3(10): 35-38.