Using Microlearning to Develop Chinese Communication Skills of Primary School Students

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Abstract

The study aims (1) to develop micro-learning media that can be applied to Chinese speech for learners, (2) to compare student communication skills between the experiment group and the control group, and (3) to evaluate the students' attitude toward using microlearning to train Chinese speech in children. The total sample of 100 students (two classes) for this experiment was from the fifth grade of Ronghu Public Primary School in Guilin, China. The research instruments included a questionnaire on students' attitudes toward microlearning teaching and assessing students' communication skills after microlearning lessons. The statistics involved in the experiment were mean, S.D., t-test, and ANOVA. Random and control variables were extracted to ensure the reliability of the experimental data. The research found that (1) the teaching content and teaching video designed through microlearning media received high-quality evaluations from five experts, with a mean score of 4.43, (2) the results of the communication ability of students in the experimental group were higher than those of the traditional group, and (3) a survey of students after training with microlearning showed that there was a course in which students had a strong interest in microlearning and a very positive attitude towards learning.

Keywords: Microlearning, Communication Skills, Student Attitude, Chinese primary school students

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Introduction

The Internet has grown particularly rapidly in the past few years, and more relevant forms of learning have emerged. Mainly since the outbreak of the pandemic, many schools have used electronic platforms on mobile devices for online instruction to ensure student learning, which has become an essential reason for further increasing Internet penetration among Chinese primary schools.

Through videos and mobile devices, microlearning can operate in synergy with mobile learning so that you can learn anytime and anywhere. Sozmen (2022) considered that many studies have shown that microlearning encourages learning by facilitating small chunks of knowledge and can be easily integrated into everyday life. It allows students to learn on demand. It focuses on the learning process, divides the learning materials into smaller units, and targets the flexibility and agility of the learners.

Microlearning provides an opportunity to change Chinese communication teaching. Compared with the traditional learning method, face-to-face learning schedules are fixed. People are eager to learn instantly, anytime, anywhere (Leong et al., 2021). In addition, microlearning respects individual differences and provides individualized learning. Learners can set their own learning time, content, and methods according to their conditions to achieve self-management. Therefore, microlearning in Chinese communication teaching has significant advantages that teachers can use in practice.

However, there are different degrees of inadequacies in the teaching of everyday spoken language in China nowadays. Liu (2023) said that based on the current primary school language teaching activities, it could be found that the existing primary school language teaching, to cope with the examination catch up with the teaching progress, often neglects oral communication teaching. The teaching of verbal communication in real life should not be overlooked when children need to build up their language expression system.

This study adopted an experimental approach to design and develop microlearning to improve some problems in teaching Chinese speech to increase students' motivation to learn Chinese speech. Accordingly, this research explored the effect of microlearning on Chinese children's communication abilities. The study questions are RQ1. How is the microlearning media applied in Chinese speech teaching for children? RQ2. What is the impact of microlearning teaching styles on children's Chinese communication skills? RQ3. What is the attitude level of students using microlearning to train Chinese children in communication?

Research Objective

1. To develop microlearning media that can be applied to Chinese speech for learners.

2. To compare student communication skills between the experiment group and the control group using microlearning to train Chinese speech of children.

3. To evaluate the students' attitude toward using microlearning to train Chinese speech in children.

Literature Review

Microlearning

Microlearning is a type of fragmented learning method, which means learners can attend small and bite-sized training sessions via portable devices, not just computers, to learn anytime and anywhere in an informal manner, such as when waiting in a line for coffee or while riding the bus (Grant, 2019). Theo (2005 cited in Horst et al., 2020) first defined the concept of microlearning as dealing with smaller learning units and focusing on shorter learning activities. Microlearning is a novel teaching method in which the courses are divided into easily comprehensible and trim pieces. Therefore, microlearning facilitates and simplifies the learning process and is considered a more popular approach for today's students by reducing the large amount of information (Kossen and Ooi, 2021).

Communication Skills

Speech communication is a face-to-face, two-way, and interactive information exchange activity. Robbins (2016) stated that good communication would help trainees and students develop motivation by giving them clear directions, working content, and what could be done to improve their performance. Communication is not just a simple activity of listening and speaking but focuses on the state of interaction generated by each other. Darma and Supriyanto (2017) stated that communication is a process of conveying and cycling information, which can be in the form of facts, feelings, ideas, data, or information transferred to others. At the same time, speech communication in upper elementary school refers to the ability of elementary school students to learn to use civilized and polite spoken language to communicate meaningfully with others in a specific communicative situation under the guidance of teachers.

Students' Attitude

To a certain extent, attitude indicates action adoption. Therefore, students with positive attitudes will firmly believe in the e-learning system (Sabah, 2013). Students with positive attitudes and beliefs are more prone to engage in constructive learning than others without (Mantle-Bromley, 1995). Also, Mori (1999) believed that positive attitudes could complement students' skills deficiency.

Students are more likely to collect assignments through e-learning than the traditional method (Autila et al., 2023). Therefore, the prominent role of a teacher is to change their students' negative attitude into a positive one because the attitude will influence the following learning actions. It is generally believed that students' attitudes are formed due to the interaction between the influence of the environment and the psychological needs of individuals.

ADDIE Model

To better apply microlearning to the teaching of Chinese speech in primary schools, this study chooses the Addie model advocated by Gagne as the basis for designing the microlearning of Chinese vocabulary**.** The contents and operating steps of the Addie model are as follows**:**

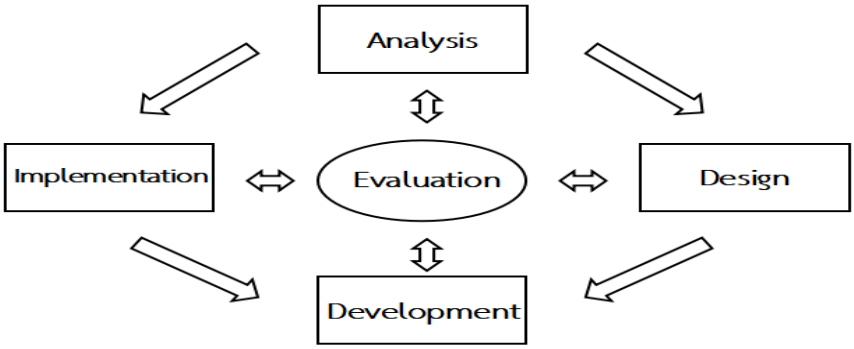


Figure 1 ADDIE Model

Research Framework

Microlearning and traditional learning methods are the independent variables; the achievement and satisfaction of learners are the dependent variables. There is a causal relationship between the independent variable and the dependent variable. That means the microlearning model teaching effect influences learners' achievement in the class. Furthermore, learners' achievement can affect their satisfaction with the microlearning model. The relationship between the independent variable and dependent variable in this study can be shown as follows:

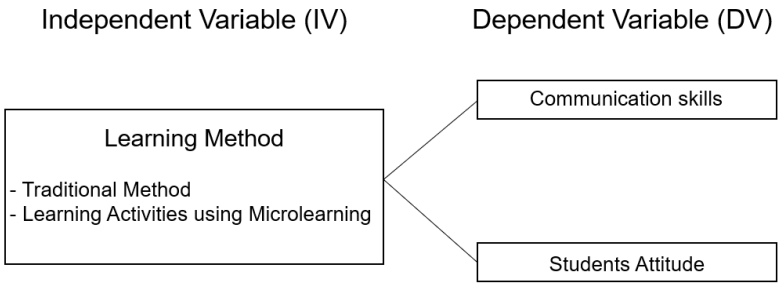


Figure 2 Research Framework

Hypothesis

Hypothesis 1: The content, instruments, and modalities of the microlearning pedagogy were given high validation by experts.

Hypothesis 2: The students in the experimental group after microlearning instruction obtained higher scores on the communicative skill test than the students in the control group after traditional instruction.

Research Methodology

Research Design

This study is quasi-experimental. A quasi-experimental design is a research method that uses accurate experimental methods for practical problems; it does not allow total control over the research conditions, which, in some ways, reduces the level of control. The empirical background in which this experiment is situated is under traditional Chinese education, and the students are in the same educational system, where the teaching method is mainly based on test-based education. During the experiment, the experimental group used the teaching model of microlearning and the control group used the traditional teaching model. The principles of the experimental design and requirements were reverted to a greater extent in conditions close to reality and the influence factors were controlled to a maximum extent.

Step 1: To study the microlearning mode of Chinese communication in primary schools and conduct a preliminary investigation on the research objects; Step 2: Design questionnaires and test questions; Step 3: To determine the experimental group, the control group, and the materials for the class. The course materials selected by the researchers are from primary school Chinese textbooks; Step 4: Apply the micro-learning model to Chinese communication teaching and make the corresponding teaching plan; Step 5: After the end of the course, a follow-up questionnaire survey was conducted on students to obtain the first type of experimental data; Step 6: Randomly select 100 students to test the observed effect and receive the second type of experimental data; Step 7: Collect and analyze the data to get the third type of experimental data.

Population and sample

The microlearning teaching activity is carried out in a public elementary school in Guilin, China, which has comprehensive teaching equipment, electronic whiteboards, and projectors in the class. To ensure the objectivity and effectiveness of the experimental results, a random sampling method was adopted in this experiment. Fifty fifth-grade students from the school were randomly selected as the experimental group for micro-learning teaching, and another 50 fifth-grade students were chosen as the control group. The control class is taught with traditional teaching methods, and

the experimental style is acquainted with the microlearning method. The two groups have the same teaching time and learning content during the experiment, and both use the unified edition of primary school Chinese textbooks.

Research Instrument

(1) Lesson plan and microlearning Media (Videos)

This paper designs teaching design templates and lesson plans for Chinese speech microlearning teaching in elementary schools, hoping to effectively improve the design efficiency of Chinese speech microlearning teaching through this template so that the microlearning can better serve students and teachers. To make it easier for front-line teachers to develop microlearning, qualitative analysis was employed to process experts' feedback and suggestions, and results using 5 Likert scales. Microlearning media consists of five development steps, namely research, design, production, implementation, and evaluation.

(2) Post-test

There was no pre-test in the experiment. This is because the sample students selected for the investigation were all from the same public school. The sample students were of the same age and were taught by the same teachers daily in their previous teaching environments. On this basis, the experiment randomly (without accepting any conditional selection) chose two classes in the fifth grade and, under the condition of the same content, teaching time, and instructor, changed the teaching method of either category to microlearning-assisted instruction (the experimental group). In contrast, the other type used the original traditional teaching method (the control group).

The posttest focuses on the post-experiment characteristics of the test subjects (e.g., students' scores on measures of communicative competence after the experiment). The post-side data compare the different communicative competence assessment results obtained by the experimental group (using the microlearning teaching approach) and the control group (using the traditional teaching approach). The posttest contained specific and varied scoring criteria for the students' oral training, which were divided into 12 significant items with 1 point for each item, totaling 12 points.

The reliability and validity of the research instrument were examined through a detailed description of the data and peer revision of the research instruments. In addition, an IOC (item-objective congruence) survey was administered, which resulted in a score of 0.9 out of 1.

(3) Students Attitude Questionnaire

The questionnaire consists of three parts and uses IOC to validate each question by experts. Part I: This part mainly investigates the background information of students, such as gender, age, and class. Part II: This part is a close-ended questionnaire that is based on Likert-type scales. The participants are asked to rate their degree of agreement on each statement from numbers 1-5.

The interpretation of each number is described as follows: 5 = strongly agree; 4 = agree; 3 = undecided; 2 = disagree; 1 = strongly disagree. Part III: This part is an open questionnaire. Subjects were asked to express their attitudes and suggestions on the micro-learning model, including suggestions on advantages and disadvantages.

Data Collection

The experimental subjects for this study were selected from fifth-grade students in public primary schools. In this experiment, the sampling method adopted was random sampling. Fifth-grade students of public primary schools were selected as a total according to the purpose of the study in this paper. Following the principle of randomness, two classes in the fifth grade were randomly selected by adopting the method of non-return sampling. The two classes drawn were used as the control and experimental groups of the experiment. However, since sixth-grade students are busier with their schoolwork than their fifth-grade counterparts, the fifth-grade students were selected as the subjects of the investigation.

According to the experimental design, data collection is divided into three steps, corresponding to three data types.

Step 1, the questionnaire survey on the attitude of the experimental subjects towards micro-learning was collected, and the result of this study could be analyzed to explore the degree of students' acceptance or adaptation to micro-learning teaching methods.

Step 2, the oral communication ability test results of the experimental group and the control group were collected respectively after teaching, and this study can discuss whether the new teaching method of learning has a positive impact on the oral communication ability of the experimental subjects.

Step 3, the evaluation results of experts on micro-learning teaching plans and teaching methods are collected. By studying the results, it can be seen whether the teaching tools, teaching methods, and teaching contents used in this experiment are reasonable and whether this experiment has reference value.

Data Analysis

There are four statistics covered in this study, mean, S.D., ANOVA, and t-test for independent samples. Mean and S.D. calculations were used in the questionnaire on students' attitudes, in the test of oral communication skills, as well as in the experts' assessment of the experimental content. The mean is used to find the average value of the data to see the indicators involved in the data; the results were interpreted as follows: 4.50-5.00 =Very High; 3.50-4.49 = High; 2.50-3.49 = Moderate;

1.50-2.49 = Low; 1.00-1.49 = Very Low. The S.D. calculation is used to see the difference from the mean value in each item of data. T-test and ANOVA are used in the test of oral communication competence. T-test is used to prove whether oral communication competence improves or not after the micro-learning teaching method. The ANOVA further explored whether students of different levels of oral communication competence improved further after microlearning, as well as corroborated the results obtained in the T-test.

Findings

1. In a study of the use of microlearning media in teaching children spoken Chinese, three lesson plans (lesson contents, video quality) were developed to test the impact of microlearning technology on children's communication skills and attitudes. The five experts assessed the quality of the course contents and videos before initiating microlearning instruction, the results of which are shown in Table 1 below:

In Table 1, the analysis of the expert opinion data shows that the application of microlearning video media in children's Chinese communicative competence teaching is satisfactory (mean = 4.43). In addition, to further explore the application of microlearning in the teaching of children's Chinese communicative competence, the micro-lesson videos that support the pedagogical method illustrated in this paper are also of high quality and reference value. This also proves that the microlearning teaching method adopted in this paper is appropriate and can be used in children's Chinese communicative teaching. Therefore, hypothesis one, which addresses the experts' hypotheses about microlearning teaching, holds. The content, tools, and models of microlearning pedagogy are highly recognized by experts.

Table 1 Assessment of microlearning contents and teaching videos by five experts

Assessment categories	Expert opinion		
	Mean	S.D.	Level
Teaching contents	4.64	0.22	Highly satisfied
Micro Learning videos media quality	4.22	0.29	Satisfied
Summary	**4.43**		**Satisfied**

2. Analysis of student communication skills and the impact of micro learning

In this paper, to investigate the becoming of students' communication skills after microlearning instruction, this section lists the achievement scores of the two groups of students as shown in Table 2 and Table 3.

Table 2 Comparison of the communication skills of the experimental group and the control group.

Test	N	Mean	S.D.	t	df	p
Control group	50	5.74	1.00	16.825	50	0.000
Experimental group	50	8.88	0.86			

The results are shown in the table above. The mean grade of the students who did not experience microlearning was 5.74 with a standard deviation of 1.00 while the mean grade of the students who experienced microlearning was 8.88 with a standard deviation of 0.86. The results showed that there was a significant difference in the grades of the students who experienced microlearning as compared to those who did not experience microlearning (t=16.825, p-value= 0.000<0.05). Therefore, at a significance level of 0.05, it can be assumed that there is a significant improvement in students' performance after experiencing microlearning. As a result, hypothesis 2 establishes that students' achievement in communicative skills in the experimental group after microlearning-assisted instruction is higher than that of students in the control group in the traditional mode of instruction.

The result of analyzing the impact of microlearning on the communication skills of students who usually perform differently is as follows:

Table 3 ANOVA of students' academic performance

level		Levene statistics	df1	df2	Significance	Sum of squares	df	F	p
High	Between groups	0.528	1	32	0.472	52.76	1	70.8	0.000
	Within group					24.58	33		
	Total					77.34	34		
Medium	Between groups	1.08	1	34	0.31	89.99	1	229.6	0.000
	Within group					13.33	34		
	Total					103.32	35		
Low	Between groups	9.47	1	27	0.06	83.58	1	129.7	0.000
	Within group					17.40	27		
	Total					100.98	28		

The ANOVA table shows the students who usually perform as "high, medium, or low". The sig values calculated for the three Levene statistics for students with different levels of performance were all greater than 0.05, thus allowing for an analysis of variance (ANOVA). After ANOVA, the p-values of the three kinds of expressive students are all less than 0.05. Therefore, microlearning has a positive impact on students with different levels of expressive ability, which leads to the improvement of oral communication ability. The results of the ANOVA further testified to the validity of Hypothesis 2.

3. The descriptive statistical analysis of 50 evaluations on microlearning collected from students who experienced microlearning as a target group is shown in the following table:

Table 4 Descriptive statistical results of students' attitude

TOPIC	Mean	S.D.	Result
1. I am very interested in this Chinese video class.	4.52	0.79	Very High
2. I can concentrate my efforts on such video lessons.	4.44	0.79	High
3. I can learn in video lessons.	4.36	0.90	High
4. I think video class is helpful to your study of Chinese speech.	4.46	0.89	High
5. I enjoy the learning style of Pictures and videos.	4.56	0.93	Very High
6. I am willing to learn Chinese speech through Pictures and videos.	4.32	1.06	High
7. The activities have made me more confident in learning Chinese speech.	4.18	1.02	High
8. Video lessons make learning easier.	4.3	1.04	High
9. I would prefer to take video lessons in the future.	4.3	1.18	High
10. I can gain more knowledge through video and picture lessons.	4.32	1.06	High
11. This is an interesting way to improve my independent learning skills.	4.32	1.05	High
12. Speech communication skills are important.	4.56	0.73	Very High
13. I think speech communication skills are helpful in real life.	4.48	0.97	High
14. I have obtained more knowledge of speech communication.	4.28	1.01	High
15. I will not be distracted by this interesting class.	4.2	1.16	High
16. The teacher's teaching methods have had a great impact on my study.	4.46	0.91	High
17. I love this new way of teaching.	4.54	0.91	Very High
18. I feel like the learning atmosphere in the micro course.	4.28	0.99	High
19. I am sure that my speech communication skills can be improved through this new way of teaching.	4.26	1.05	High
20. I will recommend this new way of teaching activities to others.	4.14	1.26	High

The data in Table 4 shows that the scores of all 20 questions are more significant than 4. They are all at the High level and above, among which the questions "I am very interested in this Chinese video class," "I like the learning method of pictures and videos," "Verbal communication skills are important," and "I like this new teaching method" have mean levels of 4.5 and above, which are at the Very High level. The average level of the questions "I am interested in this Chinese video class," "I like the picture and video learning method," "Verbal communication skills are important," and "I like this new teaching method" are above 4.5, which are at Very High level.

The Microlearning Effectiveness Questionnaire consists of 20 questions. All questions were based on the dimensions: learning feel, learning experience, and learning strategy. The statistical analysis of the results of each dimension is as follows: after the microlearning, students have a strong interest in the course and have a positive attitude toward learning again. This is important for the promotion and application of microlearning.

Discussion

In this study, microlearning training was presented in classrooms with various content and scenarios using different topics to allow students to experience the benefits of microlearning on oral communication skills differently. The experiment was planned to last three weeks to ensure that the microlearning training was adequately presented, and the researcher and five experts reviewed the content. Several educational scholars have studied various aspects of microlearning.

1. Ma et al. (2021) argued that microlearning has the potential to meet learners' personalized learning needs through a variety of small-scale educational resources and flexible learning opportunities and is an effective way for online teachers to develop professionally. Lee et al. (2021) studied the learning effects of microlearning programs defined as effectiveness, efficiency, and impact. Microlearning courses can build new environments for children's learning and help students train quickly on relevant content. There were many improvements in students' communication skills after microlearning instruction (as seen through the assessments in Table 5), and microlearning contributed equally positively to students' communication skills at all levels. Jiang et al. (2022) claimed that students' attitudes toward microlearning had a positive impact on learning satisfaction. The results of a questionnaire administered to students after microlearning during the experiment showed that the majority (more than 88%) of the participants had a positive attitude towards this new microlearning method and enjoyed the learning atmosphere.

2. In addition, most of the participants also believed that this teaching method made the learning of oral knowledge easier and increased their interest in education. Akbar et al. (2023) believe that the measurement of microlearning environments can provide insights into students' real-life

experiences and inspire us to understand the differences between teaching, delivery, and learning courses. Robles et al. (2023) think that the traditional learning technology development is slow, and teaching of the course content also cannot adapt to today's students to acquire new knowledge. Díaz et al. (2023) considered higher education the unique transition from face-to-face to online scenarios, encouraging the disruptive method of adaptive distance learning applications. This is because students can maintain a more positive attitude towards learning at all times in a microlearning teaching environment, and at the same time, students can acquire more helpful knowledge or skills related to the course in this new teaching style.

3. In this paper, the content of micro learning is language communicative competence, and the experimental subjects showed more interest and positive learning attitudes towards this new teaching method and generally accepted microteaching to a better extent. Sakata (2022) stated that the new learning style of microlearning has brought great convenience to contemporary students. Sun et al. (2022) considered that computational thinking plays a crucial role in the fields of science, technology, engineering, and mathematics (STEM), but it is still unclear whether students' attitudes toward STEM learning are related to CT skills. Younis (2017) also used the same post-test experimental method as this article when exploring the impact of simulation on higher-order thinking ability and chemical reaction attitude in scientific research. On this basis, the communicative competence of the experimental subjects was significantly improved after the teaching of the microlearning teaching method. The teaching contents, modes, and tools adopted by microlearning in the experiment were highly evaluated by experts, which made the implementation ability of microlearning teaching verified.

Therefore, hypotheses 1.2, both of which are valid in this paper. While experts highly evaluated the teaching contents, modes, and tools of microlearning, the communicative competence of students who have been taught by microlearning is much higher than that of students who have been trained by traditional teaching. In addition, students could accept the microlearning teaching method more easily.

Suggestions

1. Suggestions for Research Utilization

1.1 Inspire students to learn: The research results above show that learning will be active, easy, and productive by stimulating students' interests. Nevertheless, students' interest in learning is not innate. It mainly lies in how teachers guide students, fully mobilize their enthusiasm and initiative for learning, and then be able to learn creatively, ultimately achieving the purpose of optimized classroom teaching and improving teaching efficiency.

1.2 Make use of flexible teaching methods: Different teaching methods can be used for teaching content, tasks, and students. To stimulate students' interest in learning, teachers should select their teaching methods scientifically according to the content of the teaching materials and the actual situation of students and make good use of colorful classroom activities to guide students to have a deeper understanding and perception of the text, thus stimulating students' desire for learning.

2. Suggestions for Future Research

Microlearning can stimulate students' interest in learning and is a learning method that aligns with the modern teaching environment. Because of the careful implementation, students easily accept it, it should be used in other subjects, not just communication skills. Making subject knowledge into microlearning materials makes learning easier and more effective for students.

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