Research on the Design and Application of Micro-Class on IELTS Vocabulary

Hongyan Zhang[1], Dao Zhou[2], Junhua Zhou[3, *]

[1]School of Software and Microelectronics, Peking University, Beijing, China

[2]International Department, Suzhou No. 10 High School of Jiangsu Province, Suzhou, China

[3]Shanghai Publishing Division, Higher Education Press, Beijing, China

Email address:
zhoujunhua@hep.com.cn (Junhua Zhou), drzhy@pku.edu.cn (Hongyan Zhang), zhoudao88@163.com (Dao Zhou)
[*]Corresponding author

To cite this article:

Abstract: Traditional online vocabulary coures are not able to meet the needs of IELTS exam participants. It cannot solve the problems arising from content, form and process of learning. In the process of learning students are often perplexed by the trouble of mismatching between objectives and learning resources, lacking of methodological guidance, and insufficient motivation. Through surveys and interviews this research explores learners' strong demands in understanding the background knowledge of subject vocabulary, recognizing synonyms in reading and writing, and applying advanced vocabulary in writing. Micro-class resource library focusing on these demands are constructed through independent video-shooting as well as re-editing of open resources. Teaching experiment at some international schools in Beijing, Shanghai and Suzhou of China is conducted to testify the effectiveness of the teaching design and implementation of the proposed micro-class. The experiment shows that the IELTS vocabulary micro-class designed in this study can effectively help learners improve their vocabulary recognition and application ability in a short term. IELTS Vocabulary micro-class not only meets the learning requirements of traditional online courses, but also meets the needs of teachers in terms of teaching content, teaching process, activity design and online interactive feedback. In this study, the form of micro-class is combined with the vocabulary classification model. In this case a complete teaching system from paper books to online micro-class is constructed, which has certain enlightening significance for online vocabulary teaching. Results show significant improvements can be made to some extent in learners' IELTS vocabulary acquiring, application skills and stronger motivation of learning.

Keywords: IELTS Vocabulary, Micro-Classs Design, Vocabulary Acquisition, Online Learning

1. The Introduction

According to *China's Ten-year Development Plan for Education Informatization (2011-2020)* issued by the Ministry of Education, the policy and concept of "Education Informatization" has become one of the strategic choices for the development of education in China by giving full play to the advantages of modern information technology and promoting the deep integration of information technology and education. [1] In the information society, people's ability to obtain, analyze, process and use information directly determines the level of learners' information quality, which also forms the basic requirements for the training of new

talents. Without such ability, people will not be able to adapt to the study, work, life and competition of the information society, and will be eliminated by the information society. [2] The essence and connotation of the full integration of information technology and education is to further realize the structural reform of education system on the basis of improving "the environment of teaching and learning" and "the mode of teaching and learning" by technology application. [3] The vocabulary of every language is closely related to its culture. Many words in English have meanings different from those in Chinese culture, and many words in Chinese cannot be described in English. In both English and Chinese, there are many words with specific cultural information. Students often only understand and master

words literally, and it is difficult to take into account the cultural differences. Therefore, we must tell students the social and cultural meanings of words so that students can understand their cultural connotations. [4] Micro-class, as a new technological means, can create the context of vocabulary as much as possible in content design and resource construction. It also can enhance the comprehensibility of vocabulary and subject background knowledge, and break the old environment and traditional mode of vocabulary teaching, and open up a new path for vocabulary teaching with its unique advantages. [5]

This study takes IELTS (The International English Language Testing System) as an example, which has universal influence in the world, and takes its vocabulary micro-class teaching as the entry point to meet the current needs of IELTS learners to learn vocabulary online. Based on the constructivism theory [6], cognitive theory of multimedia learning [7] and the theory of second language acquisition [8], a micro-course teaching program to effectively assist learners to learn IELTS vocabulary is designed and a micro-course resource library is constructed to verify the teaching effectiveness in this experiments.

2. IELTS Vocabulary Micro-Class Design

2.1. Demand Analysis

As the findings show in the preliminary questionnaire survey based on the general cognition of IELTS vocabulary, most learners have the perception that vocabulary is very important for IELTS listening and reading, which fully confirms the precious value of IELTS vocabulary teaching. According to the survey results, a large proportion of learners are willing to accept professional guidance from teachers or high-level examinees, so online learning is an important choice. Compared with ordinary online courses, micro-courses also have the advantages of time length and fine content particles. If additional feedback mechanism is added, it can better meet the fragmented and personalized needs of learners.

In addition, the survey results show that the focus of IELTS vocabulary learning is also the difficulty for most learners, which mainly includes three aspects: the memory of basic vocabulary knowledge, the identification on the context of vocabulary utilization and the application of high-score vocabulary. The answers to the questions about the above aspects provide objectives for the design of vocabulary

micro-class in this study. Based on this hypothesis, micro-class may be better than other means to meet learners' needs for learning vocabulary. The educational effectiveness is one of the main standards to test the quality of teaching materials. Students' satisfaction with teaching materials directly affects students' interest in learning, their acceptance of knowledge and the cultivation of skills. [9]

To sum up, the needs of IELTS vocabulary learners provide a basis for the design and development of IELTS vocabulary micro-classss.

2.2. Feasibility Analysis

In practice, the research team explored the feasibility of combining the main points of IELTS content with the characteristics of micro-classss. Disordered subject vocabulary is not conducive to learners' deeper memory. [10] Excessive multimedia materials and beautiful typographic appearance will increase learners' cognitive load to a certain extent, which is not conducive to students' examination. [11] In terms of the feasibility of the form, IELTS vocabulary micro-class is more suitable for fragmented learning because of its characteristics of shortness, and its extensibility also enriches the interest of teaching, which is of great help in mobilizing learner's learning initiative. In terms of the feasibility of content setting, according to the results of research on learners'demand, the main requirements of IELTS vocabulary knowledge and the course content setting include: the basic knowledge of subject vocabulary, the strengthening memory of basic disciplines background, high-score vocabulary application in writen or oral English, which can meet the needs of students to make preparation for IELTS test. In terms of technological and operational feasibility, learning on mobile terminal platform is the mainstream way of learning. In the mobile platform, Wechat Small Program has become the first choice for this study due to this software's characteristics of convenience, lightweight application and social sharing.

2.3. The Development Process

Based on the existing research and practical exploration, the research team concludes that IELTS vocabulary micro-class is generally suitable for the following development and design process, as shown in Figure 1.
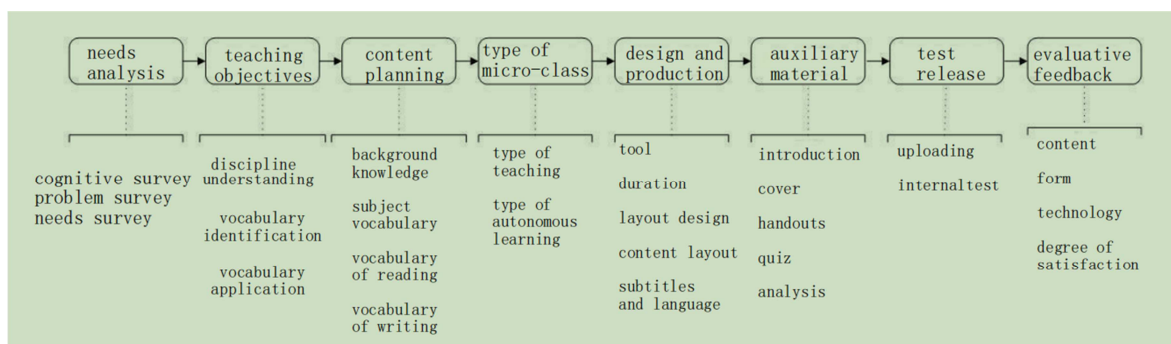

Figure 1. Development process of IELTS vocabulary micro-class.

2.4. Content Planning and Organization

According to the analysis results of the questionnaire survey, with reference to IELTS online mock examination, official guidelines and interviews with experienced trainers, the main points of the study are determined as follows: IELTS subject background knowledge (mainly related to listening and reading); synonyms discrimination needed in English speaking and writting; the application of high-score vocabulary in writing. The planning and organization of IELTS vocabulary micro-class mainly focus on the above three aspects.

2.5. Teaching Activity Design

In practical application and promotion of English network teaching resources, many shortcomings in design and application are gradually exposed. Existing web-assisted teaching resources emphasize the transmission of English knowledge and the input of learning forms, but lack reasonable teaching design and interactive teaching experience. [12] This study divides the whole teaching process into five steps: guidance—teaching—summary—test—review. In this study, two steps of "test" and "review" were added at the end of the process to improve learners' short-term memory, which is of great help to vocabulary teaching quality improvement. In addition, as IELTS is an overseas school entrance examination, the learning motivation of participants conforms to the instrumental tendency. [13] It indicates that learners have strong practical needs or clear purpose for learning. Therefore, excessive incentive means are not necessary in the teaching process. Only the younger students who lack sufficient self-control need to be appropriately motivated. [14]

2.6. Video Production

Due to the characteristics of content presentation, this paper adopts the method with studio recording and video clipping to make micro-class videos, combining the way of resource reconstruction with content production. The former explains vocabulary separately for reading and writing, while the latter explains subject background knowledge and lexics. The research team did not use the seven-minute-length micro-class as an appropriate teaching materials, since test-takers are more self-motivated than MOOC leaners. The initial assumption is that students can accept those vedio clips with more than seven minutes length. According to the survey, 73% of IELTS learners surveyed defined the length of time they could concentrate on watching a video as 11 to 20 minutes. Therefore, the duration of IELTS vocabulary micro-class video should be about 10 minutes, less than 15 minutes.

As for the form of presentation, animation with background explanation and subtitles is adopted for online courses like *"discipline background knowledge and vocabulary"*, while PPT courseware is selected for simple vocabulary explanation, with synchronous narration for the whole process. As for the layout of interface, the design specifications of the mobile terminal are followed, which is to be intuitive and concise as well. In terms of subtitles and language settings, the subtitles of English explanation and simultaneous display of Chinese are adopted.

3. Experimental Data Analysis and Conclusions

3.1. Purpose and Plan of the Experiment

In order to verify the usability, effectiveness and learner satisfaction with the IELTS vocabulary micro-class designed in this study, a 22-day IELTS vocabulary micro-class teaching experiment was conducted for target learners.

Forty-five high school students from three international schools in Beijing, Shanghai and Suzhou of China were selected as the tested objects. All the students to be tested were expected to take the IELTS test within one year. During the experiment, the whole tested group was divided into experimental group and control group. The experimental group and the control group had the same teaching objectives and different learning tools. The experimental group requires learners to take personalized fragmented time to learn "*IELTS vocabulary micro-class*". Those learners in the control group take their own most commonly used methods as usual to learn the same content for the same learning objectives. The whole experiment process consists of four steps: pre-test, micro-class learning, post-test and delayed retest. All the test questions designed for both groups are identical. Finally, the learning outcomes of the two groups were tested through post-test.

3.2. Experimental Evaluation Method

For the evaluation of learners' micro-class learning, this experiment adopts the method of combining objective test evaluation with subjective questionnaire survey.

The objective vocabulary test is designed in accordance with the requirements of IELTS standards to measure learners' vocabulary proficiency through timed examining. The subjective questionnaire survey is arranged after the post-test of micro-class learning, mainly for finding out examinees'instant subjective feelings about the whole micro-class learning process, curriculum assessment, and the degree of satisfaction with the course.

3.3. Objective Experimental Data Analysis

Firstly, SPSS statistical software was applied to test the normal distribution of the pre- and post-test scores of the two sample groups of learners. The post-test results of the two groups were consistent with normal distribution. The subsequent T-test on independent samples was used to verify the difference between the pre- and post-test for the two groups. As shown with the correlation coefficient results of paired samples, it can be concluded that the

correlation coefficient between the experimental group and the control group in the average score of the pre-test and the post-test is positive, and the corresponding probability is

less than 0.05, so there are significant differences between the pro-test scores and the post-test scores. It is shown as in Table 1.

Table 1. *Correlation coefficients of paired samples measured in pre-test and post-test for two groups of students.*

	N	Correlation coefficients	Sig.
Pair 1. Results of pre-test and post-test of experimental group	18	.727	.001
Pair 2. Results of pre-test and post-test of control group	18	.872	.000

Finally, in the paired sample test, it can be seen that the T-test probabilities of the experimental group and the control group are 0.012 and 0.015 respectively, which are greater than the significant level of 0.05. Therefore, it can be

considered that the two different learning styles can effectively improve learners' IELTS vocabulary profficiency level, as shown in Table 2.

Table 2. *Results of paired samples T-test for the two groups of students through pre-test and post-test.*

	Difference in pairs					t	df	Sig. (double side)
	The mean	The standard deviation	Standard error of the mean	95% confidence interval for difference				
				The lower limit	The upper limit			
Pair 1 (experimental group) pre-test results minus post-test results	-7.19	10.81	2.55	-12.57	-1.82	-2.82	17	.012
Pair 2 (control group) pre-test results minus post-test results	-2.83	4.43	1.04	-5.04	-.63	-2.71	17	.015

The difference between the two groups is shown as in Figure 2 and Figure 3. As seen from the figures, most learners performed better in the post-test than in the pre-test, and the experimental group's performance was improved more significantly.
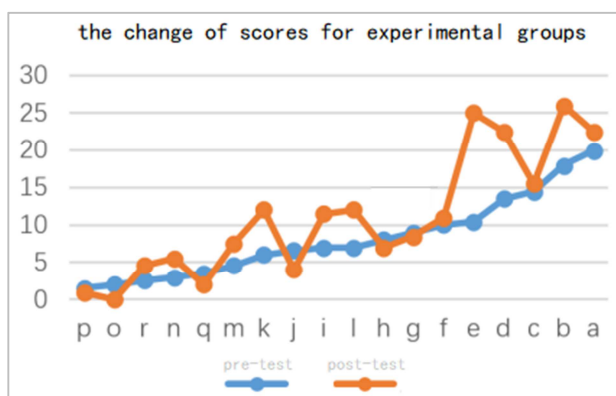

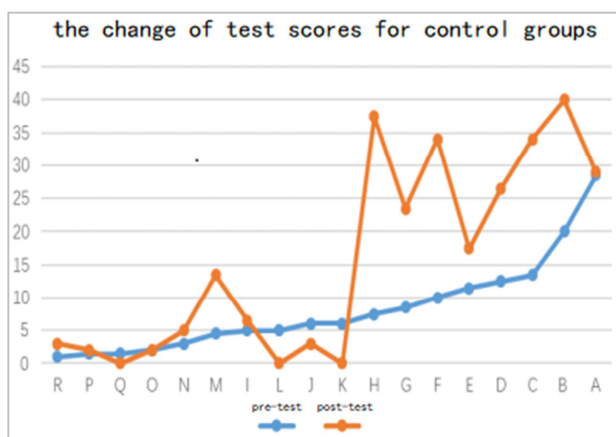***Figure 2.*** *Scores change of experimental group.*

Figure 3. *Scores change of control group.*

In order to test the maintaining effect of learning, delayed post-test was conducted on both groups of subjects one month later. The results showed that the experimental group scored slightly lower overall in the delayed post-test, while the control group performed mostly better in the delayed test. As the interviews with individual learners showed that learners in the experimental group almost never chose to watch micro-class videos again after learning, and their review frequency and the level of attention to what they had learned were lower than those in the control group. Therefore, the effect on IELTS vocabulary micro-class for immediate learning is more obvious, while the effect on the formation of long-term permanent memory is weak. Therefore, micro-class learning means can be used as an auxiliary method to strengthen the effect on short-term and immediate learning. In order to make learners truly master and internalize vocabulary, they need to give more play to the role of autonomic learning in the later stage. To develop lifelong education, the educational resources inside and outside the school must be integrated effectively, and a "flyover bridge" between the two be built. [15]

3.4. Subjective Data Analysis

The experiment issued questionnaire on experimental group adoptiing micro-class learning in terms of their experiencing and satisfaction through the Questionnaire Star Platform. The questionnaire investigated the subjects from four aspects: content evaluation, evaluation of micro-class form, teaching process and activities, and influence of learning initiatives.

In terms the evaluation of IELTS vocabulary micro-class, most of the subjects in the experimental group were satisfied or very satisfied with the content of the micro-class. In addition to the main content of teaching, the experimental group also evaluated the content of exercises and tests. In terms of the exercises arrangement after class, more than 60% of learners

thought that the difficulty and scope of content in the exam were moderate, which was conducive to consolidating what they had learned. As for the evaluation of the explanation and analysis on the keys to exercises, more students said that "the attached answers and analysis just meet the needs". It was seen that the setup of the learning feedback mechanism of IELTS vocabulary micro-class could meet the needs of learners.

The most important factor of evaluation on the form of IELTS vocabulary micro-class is the length of teaching video. The survey of the questionnaire indicates most of the learners in the experimental group have achieved the evaluation of "relatively satisfied or more" with the length of the micro-class. This also indicates that the 5~10 minutes length of micro-class is appropriate. In terms of function design, the IELTS vocabulary micro-class has the function of double speed selection during video playback, which is convenient for learners with different foundations to set personalized playback speed. The questionnaire shows that more than 80% of learners say that the double speed setting fully meets their viewing needs.

In terms of the overall learning process of IELTS micro-class, which includes simultaneous vedio watching, after-class exercises, periodic reviews and periodic tests, more than 70% of the learners expressed that the setting was "reasonable and efficient". It shows that the design of teaching process has reached the standards of "efficiency" that the users expect. From another angle of efficiency, technology determines the difficulty of courseware operation. Most learners express that the courseware can be operated smoothly. They can accept the occasional bug of short time waiting for loading. Due to the capacity limitation of video play devices, the mobile phone generally takes a period of time to load courseware, the loading time within 1 second is acceptable. The video capacity is limited by device, which is why the video length should not be too long.

In order to improve participants' learning initiative, an interactive platform of Wechat Group was established during the experiment. Students were encouraged to keep learning through related activities by group clocking and group sharing. The background data show this incentive method has achieved certain positive effect on students' motivation. In the questionnaire survey of the experimental group, more than 70% of the students agreed that this incentive mechanism could effectively motivate them to keep learning going on.

In terms of overall evaluation, most learners still hold positive and supportive attitudes towards IELTS vocabulary micro-class. It can improve the interest and initiative of autonomic learning, effectively make up for self-study deficiency, and also can help learners make it a habit to keep learning, which is just the value of IELTS vocabulary micro-class as an auxiliary learning tool.

4. The Experimental Conclusion

The process and results of a successful teaching reform are of far-reaching significance. It can not only provide an effective learning path for students, but also create a platform for teachers' personal profession development, as well as an important way for teaching teams to rapidly improve their teaching and research abilities. [16] Based on the above evaluation results, the experiment shows that the IELTS vocabulary micro-class designed in this study can effectively assist IELTS vocabulary learners to improve their capacity about vocabulary recognition and application in a short term. By comparing the teaching tool of IELTS vocabulary micro-class designed in this study with the traditional means of self-learning, the following conclusions can be drawn: (1) This IELTS vocabulary micro-class is developed and designed by combining IELTS vocabulary requirements with micro-class characteristics. It not only caters to the requirements about traditional online course learning, but also meets their needs for teaching content, teaching process and activity design as well as for online interactive feedback. Through the micro-class system designed in this study, learners can effectively improve their understanding of subject background knowledge, their recognition of frequently applied vocabulary and of IELTS vocabulary as well in a short period of time. (2) Most learners hold positive attitudes towards the micro-class system including content, form design, process design, interface display, feedback and incentive mechanism, which indicates that they are highly satisfied with this teaching tool.

The continuous innovation and reform of information technology and communication means lead to the change of readers' needs and reading environment. [17] This study makes a pilot exploration in the field of combination of IELTS vocabulary teaching and micro-class application. In the past, the analysis of micro-class teaching design mainly elaborated from the macro aspects such as teaching goal setting, learner analysis, needs analysis and teaching media selection. This study was refined into the evaluation dimensions of IELTS vocabulary teaching with additional learner question investigation, teaching activity design and user experience, so as to make the overall research more complete and the conclusion more convincing. In addition, in terms of design ideas, this paper combines the form of micro-class with the vocabulary classification mode, and constructs a complete teaching system from paper books to online micro-class, which has certain inspiration significance for online vocabulary teaching.

References

[1]   Ministry of Education of China. The Ten-year Development Plan of Education Informatization (2011-2020) [EB/OL]. (2012-03-13)   [2022-05-08]. http://www.moe.gov.cn/srcsite/A16/s3342/201203/t20120313 _133322.html.

[2]   Junhua Zhou, Xiaoyun Liu. Exploration and Reflection on Digital Transformation of Higher Education Press [J]. Publishing and Distribution Research, 2016 (9): 46.

[3]   Kekang He. Study on "Ten-year Development Plan of Education Informatization"—Interpretation of "Deep Integration of Information Technology and Education" [J]. China Electronic Education, 2012 (12): 23.

[4] Junhua Zhou. On Cultural Infiltration in English Teaching [J]. Journal of Liaoning Normal College, 2009 (4): 59.

[5] Anonym. 2018-2019 Project Approval Announcement of Education and Teaching Innovation Professional Committee of China Education Development Strategy Society [R]. Education and Teaching Innovation Committee of Chinese Society for Education Development Strategy, 2018.

[6] Jia Wang. Investigation and Research on Teaching Methods Based on Constructivism Learning Theory [J]. College Education, 2013 (11): 116-117.

[7] Li Ou. Study on the Learning Effectiveness Based on Dubbing and Subtitle Translation Mode of IT Video Tutorial [D]. Peking University, 2014: 4.

[8] Nagy W. On the Role of Context in First- and Second-language Vocabulary Learning [M]. Cambridge University Press, 1997: 64-83.

[9] Ying Qi, Junhua Zhou. A Survey of Students' Satisfaction with College English Teaching Materials [J]. Teacher, 2016 (9): 104.

[10] Cuicui Pan, Ying He, Shanshan Ding, Yi Wang, Kun Li. An Empirical Study on English Vocabulary Memory Based on APP [J]. Overseas English, 2017 (10): 73-79.

[11] Qiaofen Chen. Cognitive Load Theory and Memory Development [J]. Modern Educational Technology, 2007 (9): 16-19.

[12] Liu Liu, Junhua Zhou. Design of Digital English Teaching Resources for Deep Learning [J]. Journal of Harbin Vocational and Technical College, 2018 (4): 157.

[13] Charles M, Reigeluth. Instructional-design Theories and Models: Building a Common Knowledge Base [M]. Elsevier, 2009.

[14] Mingyue Li. Research on the Influence of Bilingual Subtitle on Students' Vocabulary Acquisition Based on Modified Grading Model (RMH) [J]. Foreign Language, 2017 (04) (V33 No. 2).

[15] Junhua Zhou. Research on the Guarantee Mechanism of Lifelong Education Development: From the Perspective of International Comparison [J]. Education Academic Monthly, 2016 (4): 71.

[16] Ying Qi, Junhua Zhou. Exploration and Practice of Teaching Reform in Application-oriented Universities: A Case Study of College English Teaching Reform in Beijing City University [J]. Contemporary Education Practice and Teaching Research, 2017 (11): 132.

[17] Junhua Zhou, Danfeng Li. British Publishing Internationalization from Chinese Perspective [J]. Science and Technology Perspectives, 2017 (1): 268.

Biography

Hongyan Zhang, associate professor of Peking University of China; Main research interest: English teaching, Intercultural management.

Dao Zhou, current student of Suzhou No.10 High School of Jiangsu Province, China; Main interest: English learning, Creative writing.

Junhua Zhou, senior editor of Higher Education Press of China; Main research interest: Curriculum research, Textbook development.