Analysis of the Influence on English Listening Ability based on Computer Aided Technology

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Abstract. With the rapid development of Internet technology, computer technology and multimedia technology, the use of network multimedia technology in teaching is becoming more and more popular. This practice is also affecting and changing traditional teaching methods. Aiming at the current situation of college English listening training in the computer-aided technology multimedia environment, this paper selects some English teachers and third-year students from three colleges and universities to conduct relevant survey research. The problems in college English listening training under the multimedia environment are revealed, and the root causes and related constraints of the problems are analyzed. On the basis of carefully combing and analyzing the current status of research on English multimedia listening training, based on relevant basic theories, it puts forward countermeasures such as correcting the misconceptions of teachers and students, strengthening the information literacy of teachers and students, improving the teaching design ability of teachers, attaching importance to resource construction and strengthening teaching management. It is expected to provide assistance for the majority of English teachers to improve their teaching, and it hopes to provide theoretical and practical references for college multimedia English listening training activities.

Keywords: English listening training; multimedia; computer-aided technology; teaching application.

1 INTRODUCTION

Traditional college English listening training has many disadvantages [1]. For a long time, listening training was basically completed by listening and recording in ordinary language laboratories. The limitation of simply using a teaching medium affects the teaching effect and hinders the improvement of students' practical application ability Alla Zasluzhena [2]. The traditional listening class is basically based on teaching materials as the core. The teaching materials used in listening classes have strong procedural and testing characteristics. In addition, the listening materials provided in the classroom are not the various discourses, contexts, and living language scenes that

students encounter in actual communication [3]. They have no characteristics of spoken language, and their content often departs from the true communicative intentions.

Relevant scholars point out that not all language input is equally important, and only those input that are noticed can enter effective processing Wu-Yuin Hwang et al [4]. When everything else is the same, the more times a form appears, the more it can be noticed before it can enter the interlanguage system. Furthermore, the more prominent a form is in an input, the more likely it is to be noticed. Psycholinguists believe that in the process of language understanding, the process of establishing the meaning of language involves three levels: words, sentences, and chapters [5,6]. The first level is to decide what kind of words to enter into the meaning-building process based on speech listening and discernment; the second level is to establish the relationship between words; the third level combines the context and uses these interrelations to establish meaning. In principle, all words in a sentence have been identified before a syntactic relationship is achieved [7]. On the basis of speech recognition, people began to understand discourse. The ultimate purpose of language understanding is to establish meaning through the form of language, but the meaning of a sentence cannot be understood by adding the meanings of words, and a text cannot be understood by adding the meanings of several sentences Maryna Ikonnikova [8]. The study of foreign language listening comprehension strategies is based on learning strategies. Many scholars simply regard listening comprehension strategies as a learning strategy [9]. Therefore, like learning strategies, listening comprehension strategies are also divided into three categories: metacognitive strategies, cognitive strategies, and social / affective strategies [10]. The study of foreign language listening comprehension strategies mainly includes two aspects: one is the study of foreign language listening comprehension strategies, and the other is the study of foreign language listening comprehension strategies training. Research shows that the more successful learners, the more they use the acquisition strategy, and more women use the strategy than men Chang C C et al [11]. Due to differences in learners' learning styles, motivations, attitudes, and anxieties, some strategies may be more suitable for a certain group.

In order to make a more accurate analysis of the problems involved in this research, and to make a specific analysis of the learning group of college students, and then to draw practical conclusions and targeted countermeasures, this paper compiles questionnaires based on the problems revealed by existing research, selects some English teachers and students from three universities as the survey objects, and investigates the current situation of college English listening training in a multimedia environment. Through empirical investigation, the main problems in multimedia English listening training in colleges and universities are revealed, and the causes and related constraints of the problems are analyzed.

2   ANALYSIS OF ENGLISH LISTENING TRAINING IN COMPUTER ASSISTED MULTIMEDIA ENVIRONMENT

2.1   Related Theoretical Analysis

1) Multiple intelligence theory
The theory of multiple intelligences pays attention to the diversity, integrity, development, and difference of students 'intelligence. Teachers are encouraged to cooperate with students' learning strategies and adopt a multi-modal teaching method to give play to the effectiveness of teaching and learning. Intelligence consists of a set of multiple capabilities, not a single capability. In other words, human intelligence should include a series of problem-solving abilities or problem-creating potentials. It works in combination, and no intelligence exists in isolation.

The theory of multiple intelligences divides human intelligence into 9 categories to elaborate separately, which is more fully reflected in the practice of multimedia listening teaching. The diversity of students 'learning content not only has auditory stimuli, but also has visual impact. Students are not passively receiving teachers' content indoctrination, but actively acquiring information that they think is important. Students are trained in linguistic intelligence, visual-spatial intelligence, and conscious introspective intelligence. Teacher-student collaborative learning advocated by multimedia listening teaching can also have an effect on interpersonal intelligence in

multiple intelligences. Since university teaching has shifted the focus from test-taking to practical application, the application of multiple intelligence theory to English listening teaching in a multimedia environment is more helpful for students to discover and develop multiple skills related to listening ability.

2) Tower of Experience Theory

Human learning mainly acquires knowledge through two ways, one is through its own direct experience, and the other is through indirect experience. The "Tower of Experience" theory divides human learning experience into three categories and ten levels according to the degree of abstraction.

Among them, the first and second floors from the bottom of the tower belong to the experience of doing; the third to eight floors belong to the experience of observation; the ninth and tenth floors belong to the abstract experience. The "Tower of Experience" theory allows us to recognize human cognitive pathways. According to human's cognitive laws from simple to complex, from image to abstract, and the combination of image and abstraction, we can choose a reasonable way of learning, so that its own cognitive process conforms to this cognitive law and achieves the best learning effect.

Using the theoretical model of the Tower of Experience, combined with the characteristics of multimedia, English listening teaching, and college students' learning psychology, a teaching model that complies with college English listening lessons in a multimedia environment can be summarized. As the physical and mental development of college students is relatively complete, they first use multimedia to directly display materials. Students can directly translate what they hear into their own abstract concepts. Then they use multimedia to create task situations, so that students can continuously practice the abstract knowledge they have built in specific environments, and improve their abstract concepts through collaborative "doing" and "observation", thereby improving the effect of listening learning.

3) Constructivist theory

The viewpoint of constructivist theory points out that learning is a process in which learners actively construct knowledge. The acquisition of student knowledge is not through external teaching of the teacher, but rather the learner activates his existing cognitive schema in a certain context, that is, the social and cultural background, with the help of others (including teachers and learning partners). The necessary learning resources are obtained through the construction of meaning. The language input process is completed by the learner's active construction, and the learner builds his language ability through the interaction between the original language knowledge system and the new language input.

First, multimedia technology provides students with rich listening materials and creates a real language listening and speaking environment, which is conducive for students to obtain information in specific conversations. Secondly, English listening teaching emphasizes that students can use language or text to communicate and learn after they "listen" consolidate what they hear, and expand comprehensive skills. Third, due to the strong thinking ability of college students, listening training in a multimedia environment stimulates a variety of sensory organs and receives richer materials, which will also result in a diversified understanding of what they have learned and form their own knowledge system. These are the constructivist emphasises on "meaning construction". It can be seen that the constructivist learning theory is particularly suitable for college students to actively construct a knowledge system in multimedia listening learning and obtain creative knowledge, which is the core theoretical basis of this research.

4) Relevant theories of multimedia-assisted language teaching

Multimedia-assisted language teaching is also known as computer-assisted language teaching. It is based on computer-assisted multimedia systems to assist foreign language teaching activities. It mainly refers to the use of various media and technologies to carry out foreign language teaching and learning information.

Multimedia English listening teaching is a new teaching mode promoted by colleges and universities in order to comprehensively improve college students' English listening quality. It can effectively mobilize students' learning enthusiasm and initiative, and maximize their potential. While providing a diversified resource platform for students and creating a good language learning

environment, the workload of teachers is reduced, so that teachers can set aside more time to interact with students, and teachers and students can achieve the goals of teaching in a relaxed and pleasant atmosphere. In addition, teachers can use multimedia to transform content that is difficult to express in language or abstract concepts that are difficult for students to understand into concrete forms, and present them in front of students, which is easy for students to understand at a deeper level.

2.2 Process Patterns of Listening Comprehension

The process of listening comprehension, that is, speech and discrimination, is a psychological process in which schema or background knowledge interacts with input information or acoustic signals to match each other. That is to say, people must first rely on information patterns, frameworks, or networks that already exist in the human brain to decode the input information. After identification, the input information that matches the original pattern is then encoded. Cognitive psychologists of the existing schema cognitive structure background knowledge system analyzed the brain's processing of information and proposed two top-down and one-up modes of linguistic information processing. A large number of experiments have proved that correct listening comprehension is the result of the interaction of the two modes. The cognitive process of English listening training based on computer-aided technology is shown in Figure 1.

The "bottom-up" model explains the process of listening comprehension from a linguistic perspective, listening to listening material as an information source of corpus meaning. The listener performs a linear process from the part to the whole in a step-by-step manner. The relevant corpus is divided and understood until the meaning is understood.

The "top-down" model assumes that listening comprehension depends to a large extent on the schema and contextual knowledge that activates the listener. Schema knowledge is divided into content schema and formal schema. Content schema refers to background knowledge and socio-cultural knowledge related to the topic. Formal schema refers to the knowledge about discourse structure, such as the genre and the purpose of a single output.

2.3 Design of the Questionnaire

Sophomores were chosen as the test subjects, mainly because they have formed a relatively stable learning method after one year of college English listening learning, and can more accurately understand their current learning status. The students surveyed came from 21 provinces across the country, and the regions have great spans. They are all 19 to 21 years old. They have all studied English for 7 to 9 years before going to college. The comparison is universal. The questionnaire is divided into two parts: teacher's paper and student's paper. The teacher's book includes 6 aspects of the school's multimedia equipment, multimedia-assisted teaching, multimedia teaching effects, teacher information literacy, multimedia courseware production, and understanding of multimedia listening training. The student volume covers 25 aspects of the school's multimedia equipment, English listening learning, listening learning in a multimedia environment, and evaluation of learning effects.

In order to ensure the scientific and representativeness of the sampling, random sampling is adopted for the third-year undergraduate students of all majors in various colleges and universities. A total of 1,000 questionnaires were issued and 982 were returned, which are all valid questionnaires. Teacher questionnaires were randomly sampled, and a total of 125 questionnaires were sent out and 125 were returned, all of which were valid questionnaires.

2.4 Student-level Analysis

1) Listening learning in a multimedia environment
It is not difficult to see from Figure 2 that the existing resource has a low degree of compliance with the multimedia environment, and only 7% can be completely matched, and most of the remaining resources do not conform to the multimedia environment. Resources are not consistent with the environment, and the result is necessarily the lack of some needs and the waste of some

resources. This situation is particularly easy to mislead students and seriously affect their listening learning.
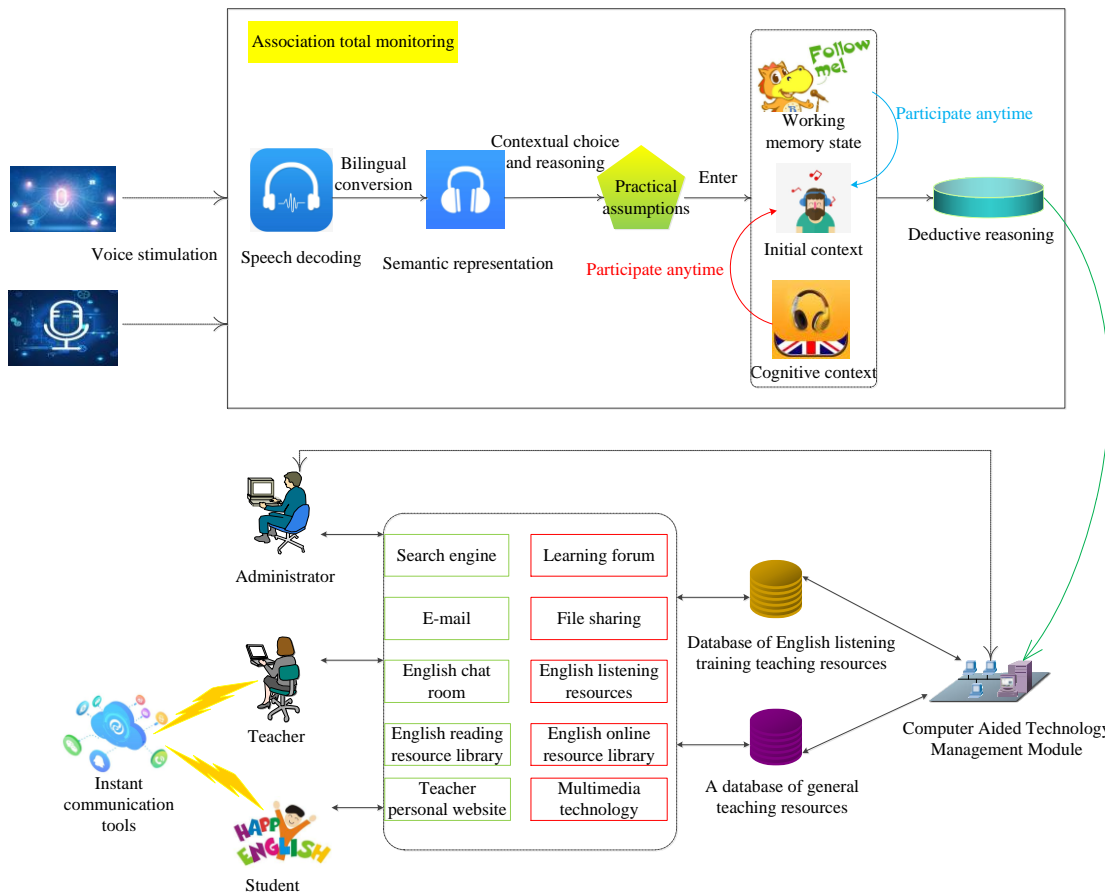

Figure 1: Cognitive process of English listening training based on computer-aided technology.
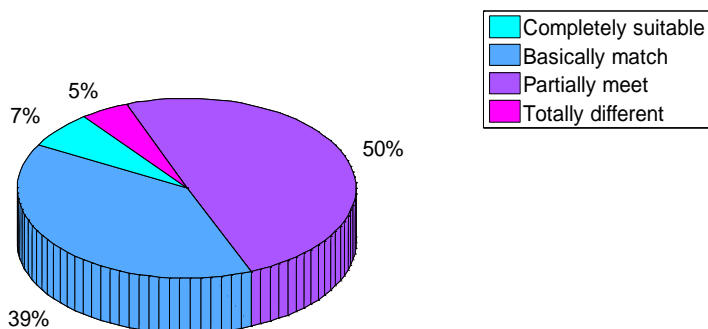
Figure 2: Existing resources conform to the multimedia environment.

Multimedia teaching can bring a wealth of information. When students are studying, it is easy for them to fail to keep up with the pace of teaching due to too much information, which affects their learning results. As Figure 3 shows, 73% of students sometimes encounter this situation, while

only 6% of students have never been affected by such problems. This reflects the emergence of English listening training materials that are beyond the acceptable range of students, and the students show obvious incompatibility.
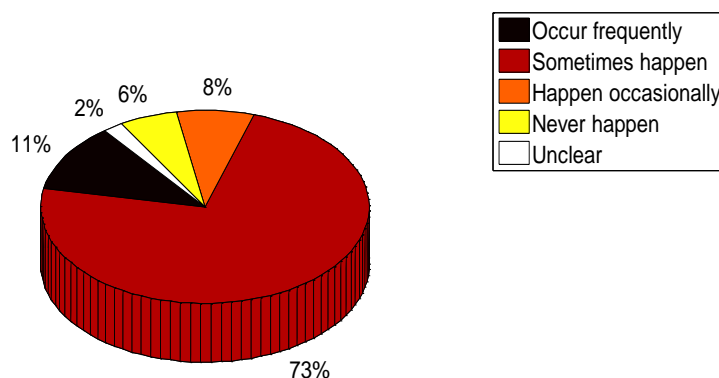
Figure 3: Excessive multimedia information affects learning.

| Project	Evaluation of learning effect (%)			
	Very good	Good	General	Bad
Learning efficiency	16	81	2	1
Learning initiative	21	52	17	10
Hearing test results	24	36	39	1
Overall learning effect	5	70	21	4

Table 1: Multimedia listening learning effect.

The effect of multimedia listening learning is shown in Table 1. To evaluate the effect of multimedia listening training from the perspective of students, we should start with aspects such as learning efficiency, initiative, and listening test results. From the data point of view, most students still believe that through multimedia listening learning, their learning efficiency and initiative have been greatly improved, thereby enabling them to exercise their various abilities, especially their self-learning abilities. This is basically consistent with the statistical results of teacher's books. However, some students can't get good exercise from the multimedia learning mode, especially the improvement of English listening test results is often not obvious. In other words, although students think that their personal abilities have improved, the direct test scores have not improved synchronously, which indicates that the existing test methods may not be in line with the actual English ability development, and its rationality is questioned. But in general, students still have a positive attitude towards the effect of multimedia listening learning.

3 APPLICATION OF COMPUTER-AIDED MULTIMEDIA TECHNOLOGY IN ENGLISH LISTENING TRAINING

### 3.1 Analysis of the Use of Multimedia-Assisted Teaching

It can be clearly seen from Figure 4 that most teachers use multimedia-assisted teaching as their main method of daily teaching, especially 16% of teachers have used multimedia as their necessary teaching method for each class. It can be seen that the current popularity of multimedia use in college English listening training is already very high, which is a very gratifying phenomenon.
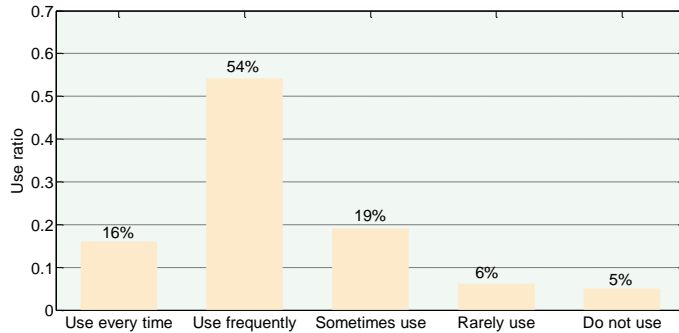
Figure 4: Proportion of multimedia assisted teaching equipment.

3.2   Analysis of Multimedia Courseware Production

The ability to make multimedia courseware using software is shown in Figure 5. Because teachers' computer skills have not reached a very high level, their ability to use software to make multimedia courseware is also relatively limited. Most teachers are in the stage of simple operation and production of courseware, and only 21% can reach the level of proficiency. Such multimedia operation ability is difficult to produce high-quality courseware.
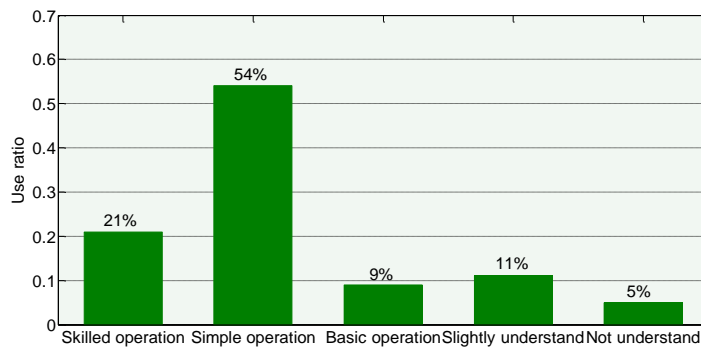
Figure 5: The ability to make multimedia courseware with software.
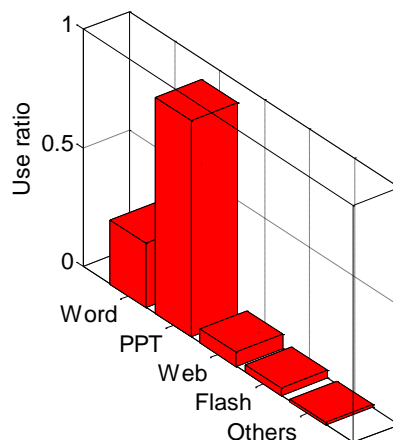
Figure 6: The form of making multimedia courseware.

The form of making multimedia courseware is shown in Figure 6. Teachers make multimedia courseware mainly in the form of PPT presentations. PPT shows good results and the production process is relatively simple, which can save production time. Therefore, teachers tend to use this form. Other multimedia formats are used very rarely. Although the process of making a Word document is simple, it has gradually been eliminated because of its single form of expression. The production process of multimedia courseware such as Flash is relatively complicated. Given that teachers' computer skills are generally not high, few people use this form. The production of web pages requires more time and the technical complexity of this form. Few people use it. However, teachers in the teaching process rely too much on the presentation of knowledge in the form of PPT, lack of interaction with students, no innovation, the effect of multimedia teaching will be affected to a certain extent.

3.3 Evaluation of the Configuration and Management of Multimedia Listening Equipment in Schools

According to the surveyed schools, the proportion of teachers using traditional listening headsets, voice classrooms, multimedia computer equipment and multimedia listening websites has reached 95%. This not only shows that teachers have used various hearing aids to varying degrees, but also shows that the relevant hardware configuration of the school has completely kept up. However, through performance evaluation, it can be found that although the performance of multimedia computer equipment and listening websites have been recognized by teachers to a certain extent, they are lower than the recognition of earlier voice classrooms, especially multimedia listening websites. At the beginning stage, the comprehensive performance cannot satisfy the teachers.

The management and maintenance of multimedia hearing equipment are shown in Table 2. Teachers' evaluation of the maintenance of the school's multimedia listening equipment is not high, and only 13% of the schools can truly maintain the equipment in a timely manner. It can be seen that the current school's maintenance and management of multimedia equipment is not in place. Although there is no case of unmaintained equipment, as long as management and maintenance delays occur, it will seriously affect normal classroom teaching. Similarly, teachers' understanding of the school's multimedia management system is not satisfactory. From the data point of view, although no one knows about the multimedia management system, only by fully understanding it can we clearly cooperate with the management of the school and use the equipment reasonably. If the teacher has any questions about the management system of the multimedia equipment, it may cause damage to the equipment during the use of the equipment, which will cause unnecessary trouble.

| Maintenance status (%)				Management system understanding (%)			
Very timely	More timely	Not timely	Not maintained	Know very well	To understanding	Don't know much	Don't understand
13	54	31	2	31	67	1	1

Table 2: Management and maintenance of multimedia hearing equipment.

3.4 Effect Analysis of Multimedia Listening Training

The impact of multimedia-assisted listening training on students and teachers is undoubtedly profound. From the perspective of affecting students, teachers generally believe that students' self-learning ability will be greatly improved in a multimedia environment. At the same time, its ability to innovate, solve problems and communicate and collaborate can be improved to varying degrees with the help of multimedia. This shows the importance of multimedia teaching for student learning. From the perspective of teachers, teachers have very clear views on the impact of

multimedia teaching on themselves: the proportion of those who believe that it profoundly affects teachers' behavior and that it is only a supplementary teaching method is not much different, which fully reflects the teachers. There are completely different ideas for using multimedia teaching. Of course, extreme views such as multimedia will completely replace the status of teachers and have no influence on teachers at all have not emerged, which also reflects that teachers are more profound and comprehensive in thinking about problems.
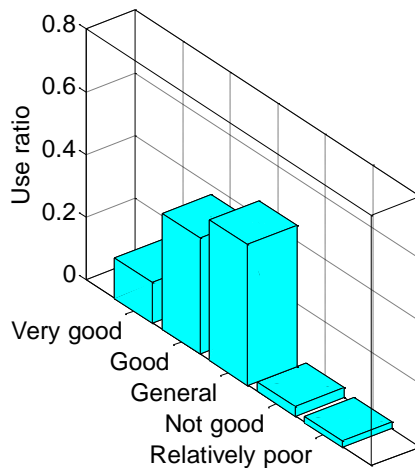
Figure 7: Multimedia practical teaching effect.

The actual multimedia teaching effect is shown in Figure 7. Although the impact of multimedia listening training on teachers and students has been recognized by teachers, in actual teaching work, no more than 15% of teachers believe that their multimedia teaching effect is very good. The teaching effect of most teachers still needs to be improved, and more than half of the teachers still have a lot of room for improvement in teaching.

4   CONCLUSION

College English listening training in a multimedia environment is a science with its own rules and characteristics. The reform of college English listening training is a long and complex systematic project. This paper makes a more in-depth study of the actual situation of college English listening training in the multimedia environment of computer-aided technology. Related theories are introduced as the theoretical basis for the study. This paper mainly analyzes the problems of multimedia listening training from the aspects of teaching and learning and environmental constraints, and proposes corresponding solutions to provide empirical basis and theoretical support for college English listening training practice activities in a multimedia environment. This paper hopes to arouse people's interest in the study of college English listening training in a multimedia environment, promote and improve the theoretical construction of multimedia English listening training, and guide the practice of multimedia English listening training.

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REFERENCES

[1]   Lei, S.: Analysis of the Influence of Affective Factors on Students' English Listening, Journal of Changchun University of Science and Technology (Social Sciences Edition), 2009. https://doi.org/10.1111/j.1744-9987.2009.00708.x.

[2] Alla, Z.: The Concept of English Philologists' Training at Swiss Universities, Comparative Professional Pedagogy, 6(2), 2006, 88-95. https://doi.org/10.1515/rpp-2016-0024.

[3] Yang, Y. T. C.; Chuang, Y. C.; Li, L. Y., et al.: A blended learning environment for individualized English listening and speaking integrating critical thinking, Computers & Education, 63, 2013, 285-305. https://doi.org/10.1016/j.compedu.2012.12.012.

[4] Wu-Yuin, H.; Yueh-Min, H.; Rustam S.: Effects of using mobile devices on English listening diversity and speaking for EFL elementary students, Australasian Journal of Educational Technology, 30(5), 2014, 503-516. https://doi.org/10.14742/ajet.237.

[5] Maria, L.; Susanne, G.; Marleen, W.: Listening to the Voices of Education Professionals Involved in Implementing an Oral Language and Early Literacy Program in the Classroom, Australian Journal of Teacher Education, 42(8), 2017, 16-28. https://doi.org/10.14221/ajte.2017v42n8.2.

[6] Ali, M.: Microteaching Experience in Distance English Language Teacher Training: A Case Study, Journal of Educators Online, 12(2), 2015, 1-34. https://doi.org/10.9743/JEO.2015.2.7.

[7] Olea, J.; Abad, F. J.; Ponsoda, V.; Barrada, J. R.; Aguado, D.: eCAT-listening: design and psychometric properties of a computerized adaptive test on English listening, Psicothema, 23(4), 2011, 802-7.

[8] Maryna, I.: Organizational and Content Peculiarities of English Teachers' Professional Training in Canada, Comparative Professional Pedagogy, 6(3), 2016, 25-31. https://doi.org/10.1515/rpp-2016-0029.

[9] Jihad, M.; Hamdan, R. F. A.: The Effects of 'Face' on Listening Comprehension: Evidence from Advanced Jordanian Speakers of English, Journal of Psycholinguistic Research, 47(3), 2018, 1-11. https://doi.org/10.1007/s10936-018-9582-7.

[10] Ching, C.; Chih-Kai, C.: Developing students' listening metacognitive strategies using online videotext self-dictation-generation learning activity, Eurocall Review, 22(1), 2014, 3. https://doi.org/10.4995/eurocall.2014.3636.

[11] Chang, C. C.; Lei, H.; Tseng, J. S.: Media presentation mode, English listening comprehension and cognitive load in ubiquitous learning environments: Modality effect or redundancy effect?, Australasian Journal of Educational Technology, 27(4), 2011, 633-654. https://doi.org/10.2190/EC.44.4.f.