A Study of Multimodal Effects on ESP Listening Comprehension

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Abstract. This study inquires into the effect of multimodality on ESP listening comprehension by examining the students' English summaries of the audiovisual recording material that comprises 51 semantic units. The study objects are 120 randomly chosen pilot cadets, who are split evenly into 4 groups: 1 control group and 3 test groups. For each group, the material is presented three times but with a different combination of multimodal. Then by using SPSS (17.0), single factor ANOVA and Post Hoc multiple tests are applied to analyze the collected data so as to find out effects of multimodality on ESP listening teaching. The study indicates that proper use of multimodality can significantly improve students' listening comprehension and visual modality has to correspond to audio modality information in order to produce desired effects. The study also demonstrates that target language subtitles are more helpful than native ones for listening comprehension.

Introduction

The study of multimodal discourse emerged in the 1990s. It refers to the use of auditory, visual, tactile and other senses in communication through language, images, movement and other symbolic resources [1]. It considers language as a social signal and other non-linguistic signals, such as music, painting, dance and media are also an important way of expression. Linguistic and non-linguistic signal modals are independent and interact with each other to generate sensible meaning [2]. Therefore, full use of multi-modal combination can mobilize students' various senses and is beneficial to students' information processing and memory, resulting in a more efficient learning. However, memory limitation of the brain makes it difficult to process a variety of sources of information simultaneously [3]. Consequently, it is necessary to process the form of presentation of information so as to avoid the negative impact of memory load. The purpose of this paper is to analyze the influence of multimodal on professional English listening comprehension and the pros and cons of different modals, hoping to provide a valuable reference for exploring effective English listening teaching modal.

Research Background

Many scholars have studied the multi-modal listening teaching and achieved fruitful results. Lambert experimented with different modals of listening teaching and concluded that the use of native language dubbing and bilingual subtitles achieved most efficiency [4]. Weinberg investigates students' satisfaction with multimodal listening teaching, and the results indicated that students were willing to accept this teaching modal [5]. Baltova experimented with the French listening instruction of non-French majors in Canada and his study showed that the target language subtitles

of the video are most conducive to students' memory [6]. Qiu Donglin demonstrated that multimodal facilitated listening comprehension and target language subtitles are more efficient than native ones to the cultivation of low-level students' listening abilities [7].

Domestic research on multi-modal listening teaching is also quite abundant. The multimodal discourse analysis and comprehensive theoretical framework of Zhang Delu provide the optimal principle for English teaching [8]. Geng Jingbei and Chen Zijuan found that the theory of discourse analysis based on teaching method is more effective, especially for the high level of students to improve the listening ability [9]. Fei Wei explained that the modal differences have different effects on the listening comprehension at different levels [10]. Yao Wei and Yao Guoqun studied multidimensional autonomous listening and found that modal helped to improve students' ability of multiple reading and understanding [11]. But at present, there is no research on the multi-modal professional English listening teaching, and there is no research paying attention to the effect of concrete modal in professional English listening teaching. Therefore, it is of great significance study the application of multimodal in professional English listening teaching and discusses its effect on listening comprehension.

Research Methods

Research Questions. This paper mainly discusses the following specific problems in multimodal English listening teaching:
(1) Does multimodal help to improve students' professional English listening comprehension?
(2) How does video / image affect students' professional English listening comprehension?
(3) How does a Chinese or English subtitle affect students' English listening comprehension?

Research Objects. The research objects are 120 pilot cadets chosen randomly in an aviation university in Changchun. 90 of them are divided evenly into three test groups with 30 in each as teaching reform objects of multi-modal teaching method and the rest 30 cadets stay in the control group with unreformed teaching design and methods. One-way ANOVA analysis of their last final examinations indicates that there is no significant difference between the two groups (F = 0.078, P = 0.964> 0.05). The results showed that (P = 0.964> 0.05). Teachers play listening materials in different ways during the experiment：test group one uses audio and visual without subtitles (audio, visual modal); test group two adopts audio, video and Chinese (audio, visual modal); test group three uses audio, video and English subtitles (audio, visual modal); control group uses only audio modal without video (audio modal).

Research Materials. The listening material is a 5-minute English documentary introducing George Cayley, the father of the aerodynamics and his contribution in aviation. The material is technically processed according to the requirements of the experiment. After clarifying requirements, the teachers play the material three times for each group in different ways, as is described above. Students are allowed to take notes during listening and then summarize its content in English as complete as possible within 10 minutes.

Analysis and Discussion

First of all, the original text of the material is divided into 51 semantic units, including information such as subject, time, people, events and effect that are important for comprehension. Spelling and grammatical errors are ignored when counting semantic units. Any word, phrase, or sentence associated with the semantic unit counts. The number of cadets who successfully write down a unit is considered as the item result of their group. Single factor ANOVA and Post Hoc

multiple tests are applied to analyze the data using SPSS (17.0). The significant level of analysis is 0.05.

The collected data is analyzed by single factor analysis of variance to investigate the effect of different modals on students' professional English listening comprehension, as indicated in Table 1.

Table 1　Effect of different modals on professional English listening

group	Mean	Standard deviation	F	P
Control group	15.42	3.417		
Test group 1	17.94	3.968	28.263	0.001
Test group 2	20.21	4.253		
Test group 3	23.46	3.108		

The results indicates that the effect of different modals on students' English listening comprehension is significantly different (F = 28.263, P = 0.001 <0.05). Test group 3 modal combination (Audio + video + English subtitles) is the more beneficial and effective than those of Experiment group 2 and 3. The result of control group is the worst of all the 4 groupes.

To further examine the specific differences in the effect of different modal combinations, the data is analyzed by Post Hoc multiple test. The results are shown in Table 2.

Table 2　Post Hoc multiple tests on the effect of different modals

Group	Group	Mean difference	P
Control group	Test group 1	-1.043	0.174
	Test group 2	-2.926	0.000
	Test group 3	-5.475	0.000
Test group 1	Test group 2	-2.017	0.017
	Test group 3	-5.642	0.000
Test group 2	Test group 3	-3.962	0.000

Table 2 shows that difference in listening comprehension between test group 1 and the control group is not significant (P = 0.174> 0.05). The score of the Test 2 is higher than that of Test group 1 (P = 0.000 <0.05); score of Test 3 is higher than the other three groupes (P = 0.000 <0.05). This indicates that different modal combinations have different effect on professional English listening. Based on level of promotion effect, the modal combination sorted as: auditory + visual (target language subtitles)> auditory + visual (native language subtitle)> auditory + visual (no subtitles)> auditory.

The results of this study indicate that it is more efficient to use multimodal in listening teaching than use only auditory modal, and the combined modal of video and target language subtitles is more conducive to students' listening comprehension. Make sure the provided visual information corresponds with auditory information so as to facilitate students' cognition and understanding of the listening material. Otherwise, failure of correspondence of the information might lead to cognitive burden and interferes with understanding. Meanwhile, it is obvious that target language subtitles are more beneficial to students' understanding than their native language ones.

Conclusion

In professional English listening teaching, teachers should coordinate the relationship between the various modalities to make them strengthen and compensate each other. Rational use of visual modality with corresponding auditory information can promote students' understanding, speed up their cognitive process and improve teaching effectiveness. In addition, adoption of English subtitles can prevent negative transfer of mother tongue caused by Chinese subtitles. Teachers should encourage students to read more relevant professional English materials and cultivate their English and Chinese comparative analysis ability to enhance their cross-cultural awareness.

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References

[1] D. L. Zhang: Foreign Language Teaching, Vol. 30 (2009) No.4, p.15.c

[2] X. Li, M. Y. Li and J. Z. Wang: Journal of PLA University of Foreign Languages, Vol. 35 (2012) No.6, p. 59. (In Chinese)

[3] J. H. Shi: Education and Vocation, (2012) No.4, p.100. (In Chinese)

[4] W. E. Lambert, I. Boehler and N. Sidoti: Applied Psycholinguistics, (1981) No.2, p.133.

[5] A. Weinberg: CALICO Journal, (2002) No.2, p.331.

[6] I. Baltova: The Canadian Modern Language Review, (1999) No.1, p. 32.

[7] D. L. Qiu, F. Y. Du: Listening Teaching and Research Frontier of Foreign Countries. Fu Dan University Press, Shanghai 2012. (In Chinese)

[8] D. L. Zhang: New Developments in the Theory Of Discourse Analysis And Its Application. Foreign Language Teaching and Research Press, Beijing 2012. (In Chinese)

[9] B. J. Geng, J. Z. Chen: Foreign Language Teaching, Vol.37 (2016) No.3, p.35. (In Chinese)

[10] W. Fei: Computer Assisted Foreign Language Education, (2016) No.3, p.68. (In Chinese)

[11] W. Yao, G. Q. Yao: Education and Management, (2016) No.7, p.96. (In Chinese)