

Factors affecting English listening and speaking abilities of non-English major students: taking engineering students as an example

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ABSTRACT: The objective of this study was to explore the factors related to engineering students' English listening and speaking ability. Hence, 147 engineering students were investigated by a survey questionnaire. The results of the survey were as follows: 1) there was no significant difference between male and female students in listening and speaking ability; 2) there was no significant influence of geographical factors and parental factors, such as parents' education level and parents' level of capacity in listening and speaking; 3) the average values of five objective factors that affect listening and speaking ability are from high to low: the social environment, English teachers, teaching resources, listening and speaking teaching materials and curriculum settings; and 4) the average value of the four subjective factors affecting listening and speaking ability were from high to low: learning attitude, learning motivation, learning method and strategy, and autonomous learning situation.

INTRODUCTION

With the advances of the teaching reform in college English in China, more scholars have undertaken research on the factors affecting English listening and speaking abilities from various aspects, and typically they come up with several results. For example, Lv's studies on the perception and attitudes of public speaking in English classes and found that there remain some problems or doubts, including the percentage of peer assessment being counted towards the total course grade and the validity and reliability of research [1].

Tai's study of college oral English test scores based on data mining technology puts forwards an obvious thesis that English study requires diligent training and, in particular, frequent training in spoken English [2]. Hu studied the main affective factors influencing the students' English listening and speaking ability [3]. Though these studies and analyses take an active part in pushing forward the teaching of college English, they do not cover much in the current learning situation of English for engineering students.

It would be quite beneficial to guide English teaching in engineering colleges and upgrade English listening and speaking skills, if the current learning situation, especially, the acquisition of listening and speaking skills, was better understood.

The aim of this article is to find the related factors that affect English listening and speaking abilities of engineering students by investigating their current learning situation and undertaking multivariable research. Finally, it presents effective ways and teaching strategies for advancing English listening and speaking abilities through analysing the subjective and objective factors that influence the acquisition of English listening and speaking abilities among engineering students.

THE INVESTIGATION OF CURRENT LEARNING SITUATION OF ENGLISH AMONG ENGINEERING STUDENTS

It has been a problem for a long time that what the students hear in their listening practice only acts as a meaningless propagation of sound, because the basic teaching model of college English established by teachers is playing audio cassettes and students' passively listening.

It is difficult for students to understand the information they hear, let alone express its contents. For students, the input and output of the information through *listening* and *speaking* are closely related. *Listening* is the basic way to obtain language information, and *speaking* externalises and presents the obtained language knowledge and skills in communication. However, since the in-class time is limited, students rarely have the opportunity to take up

communication activities, which results in their lagging ability to speaking. Therefore, listening is the most difficult part for students to adapt to, and speaking in English is the skill that they want to master at university.

Influenced by the College Entrance Examination, and College English Test Band 4 and Band 6, most students learn English to deal with the examinations, so they pay too much attention to the accumulation of words and grammar. In this case, they perform well in the examination, but suffer from lagging behind in English listening and speaking abilities, thus, undermining the development of the language output ability.

Students, especially engineering students, who prefer rational thinking and logical reasoning, are more likely to engage in mathematical and logical activities in science and engineering learning, rather than in foreign language learning. As far as foreign language learning is concerned, this results in them attaching much greater importance to grammatical competence rather than pragmatic competence, so they are better at English reading and writing than listening and speaking, and prefer syntax and discourse structure analysis. In addition, students have fewer chances to listen to English rather than to read, and also have few opportunities to communicate verbally in English. They get most of their language knowledge through visual means instead of through audio channels. As a result, students often encounter communication failure because of massive pragmatic mistakes.

RESEARCH DESIGN

Research Theme

Assuming that social and psychological factors will affect the students' listening and speaking skills, one still needs specific data to come to conclusions; one does not know exactly the degree of influence of each factor, nor which factor is the most influential. As a result, one generally divides the factors that affect students' English listening and speaking ability into objective and subjective factors. To be more specific, objective factors include gender, region, family, social environment, courses, teachers, textbooks, learning resources, etc., whereas, subjective factors include learning interest, learning motivation, learning attitude, learning methods or strategies, autonomous learning ability, etc.

A survey questionnaire was used in this study to investigate the factors that affect the English listening and speaking skills of engineering students, in order to answer the prevailing question: *What are the factors that affect the English listening and speaking skills of engineering students?* This is to find out whether subjective factors, such as learning interest, learning motivation, learning attitude, learning methods or strategies and self-learning ability, are correlated with their listening and speaking abilities. And also, whether objective factors, such as geographical factors, family factors, gender factors and school factors affect students' English listening and speaking abilities. Finally, whether there exists a significant gender difference between boys and girls in listening and speaking abilities.

Research Subjects

The survey was conducted in Qingdao Vocational and Technical College of Hotel Management with 150 freshmen from three common engineering majors selected as samples: namely, Construction Engineering Management, Computer Software Technology and Engineering Project Supervisor. Questionnaires were distributed during an English class, which ensured an authentic and valid survey. 150 students took part in the survey and 147 valid questionnaires were returned.

Table 1 presents specific information on the students. From the table, one can see that there was a great disparity between males and females. The boys' proportion was as high as 78.9%, and the vast majority of them were from the places below prefecture-level, including rural areas. The students from rural areas account for a third of the total number of students. Most of their parents received middle or high school education, accounting for 32.7% and 38.1%, respectively.

Research Methods

Quantitative research was applied in this study and data were collected through the questionnaire. The questionnaire, with a total of 50 questions (options), can be divided into two parts. The first part focuses on the personal information of students, including the major studied, gender, hometown, the education level and English skills of their parents. The second part is designed to collect information on the social environment, curriculum arrangements of English listening and speaking, use of textbooks of English listening and speaking, English teachers, teaching resources, learning attitude, learning motivation, learning methods or strategies and autonomous learning situation.

The questionnaire was based on O'Malley and Chamot's learning strategies questionnaire to make a measurement table, which takes into consideration the students' actual situation [4]. The first part, with six options, provides multiple choice questions. The second part includes 44 questions, of which are 42 multiple choice questions and two subjective questions. Multiple choice questions are employed with a *Likert five-level scale* and the data from the questionnaire was analysed by using SPSS 21.0 statistics software. Reliability analysis produced a Cronbach coefficient of 0.8943, which is higher than 0.70, indicating that the questionnaire was reliable.

Table 1: Basic information on students.

		Frequency	Percentage
Gender	Male	116	78.9
	Female	31	21.1
Major	Construction Engineering Management	50	34
	Engineering Project Supervisor	50	34
	Computer Software Technology	47	32
Region of hometown	First-tier city	3	2
	Provincial capital	17	11.6
	Prefecture-level city	42	28.6
	County-level city	36	24.5
	Rural area	49	33.3
Parents' education level	Doctor or Master	0	0
	Bachelor or junior college	40	27.2
	High school	48	32.7
	Junior school	56	38.1
	Primary school or below	3	2

RESEARCH RESULTS AND DISCUSSION

Academic Performance of English Listening and Speaking

Table 2 shows that 147 students took part in the survey (some variables are less than 147 because of the default value). The academic performance of listening and speaking in the final examination in the second semester of 2013-2014 was adopted in the analysis (the academic performance, which is sincere and valid, represents the learning situation of one year for the freshmen).

Table 2: Academic performance of English listening and speaking.

Variable	Construction Engineering Management			Engineering Project Supervisor			Computer Software Technology		
	Number	Average	SD	Number	Average	SD	Number	Average	SD
Listening	50	17.52	3.13	50	13.48	4.64	47	15.7447	3.08903
Speaking	50	8.54	1.27	50	8.58	0.76	47	8.4468	0.90430
Total score		25.56	5.08		22.52	4.75		24.2340	3.09426

The test questions were from the question bank of the Department. The listening test, with wireless broadcast, was conducted under strict invigilation, and different parts of the papers were marked by different teachers in an enclosed environment. As for the speaking test, there were two examiners in a group, and the topic was selected by a draw.

The final score was the average of the respective score given by two examiners. Three typical majors, Construction Engineering Management, Engineering Project Supervisor and Computer Software Technology, were selected. In the examination, the listening part comprised 20 points of the total score, while the speaking part was 10 points. The two parts make up 30 points in the whole examination.

The Influence of Objective Factors

In this article, the author discusses the objective factors that affect students' listening and speaking skills in two parts. In the first part, the author discusses the influence of uncontrollable natural factors including gender, hometown and family, which exert on students' listening and speaking skills, while the second part focuses on the influence of non-natural factors, such as social environment, English teachers, teaching resources, textbooks and curriculum for students' listening and speaking skills. The data show that most students generally agree with various objective factors affecting their English listening and speaking skills.

The Influence of Natural Factors

Natural factors that affect students' English listening and speaking skills include gender, geographical origin, family and other variables. Apart from gender, geographical origin, family and other variables can be scored between 0 and 5; the higher the score is, the more advanced is the place that the student comes from or the higher is their parents' education level. Details are shown in Table 3 and Table 4.

Table 3 shows that there was no significant difference between boys and girls in the overall score of listening and speaking. The average total scores were 24.08 and 24.19, respectively.

Table 3: Statistical table of groups of male and female.

Group statistics					
Score	Question 1	N	Average	SD	SE mean
Listening	Male	116	15.52	4.02	0.373
	Female	31	15.81	4.20	0.754
Speaking	Male	116	8.56	0.99	0.092
	Female	31	8.39	1.02	0.184
Total Score	Male	116	24.08	4.61	0.428
	Female	31	24.19	4.47	0.802

In Table 4, the Levene homogeneity test of variance shows that the significant probability (Sig.) of two variables are 0.460 and 0.437, respectively, higher than 0.05, which shows that the variances of the two variables in each group is equal. At same time, values of Sig. (double sided) are greater than 0.05, suggesting that there is no significant difference between boys and girls in their academic performance of listening and speaking.

Table 4: Independent sample test between male and female groups.

		Levene test of variance equations		T test of mean equations		
		F	Sig	t	df	Sig (both sides)
Listening	Equal variance	548	460	353	145	725
	Unequal variance			344	45.75	733
Speaking	Equal variance	519	473	860	145	391
	Unequal variance			844	46.14	403
Total score	Equal variance	514	475	125	145	901
	Unequal variance			128	48.46	899

Table 5 indicates that the F value of region, parents' education level and their English proficiency is 1.38, 1.16 and 0.90, respectively, and Sig. value is 0.157, 0.310 and 0.573, respectively. The fact that all significant levels are greater than 0.05 indicates that there is no significant difference in academic performance concerning factors, such as region, family factors including parents' educational level and their English proficiency.

Table 5: Test result of single factor variance (ANOVA).

		Sum of squares	df	Mean square	F	Sig.
Region	Between groups	27.25	17	1.60	1.38	0.157
	Within groups	149.94	129	1.16		
	Total	177.18	146			
Education level of parents	Between groups	13.84	17	814	1.16	0.310
	Within groups	90.87	129	704		
	Total	104.71	146			
English proficiency of parents	Between groups	14.18	17	834	0.90	0.573
	Within groups	119.29	129	925		
	Total	133.46	146			

It can be seen natural factors, including gender, region, family and other variables, do not exert much influence on the academic performance of a student's English listening and speaking. Though this conclusion is different from research conclusions of other scholars, it probably reflects the English learning features of engineering students to some extent.

The Influence of Non-natural Factors

In the questionnaire, there were five variables, which concerned non-natural factors affecting the English listening and speaking ability of students. The top mark for each variable is five. The higher the score is, the greater influence it will exert on students. Descriptive statistics (in Table 6) show that the mean value of the five variables, which are the objective factors influencing the listening and speaking skills, can be arranged from high to low in this order: social environment (M = 3.87), English teachers (M = 3.85), teaching resources (M = 3.48), textbooks of listening and speaking (M = 3.45) and the curriculum (M = 3.16).

All the value of variables surpass the critical value (mean value $M > 3.00$), which explains that students agree with the influence of objective factors on the listening and speaking skills, and attach greatest importance to social environment in the influence considering future career and the demand of social development. The following factors are teachers' vocational skills and professional level and, then, the teaching resources available and curriculum.

Table 6: Descriptive statistics.

	N	Average	SD
Curriculum arrangement	147	3.16	0.340
Textbooks of listening and speaking	146	3.45	0.459
English teachers	147	3.85	0.694
Teaching resources	147	3.48	0.567
Social environment	147	3.87	0.528

The Influence of Subjective Factors

Most of the students agreed that influences on their English listening and speaking skills was exerted by subjective factors. In the questionnaire, subjective factors were four of the variables. The top mark for each variable is five. The higher the score, the greater the influence it will exert on the students.

Descriptive statistics (in Table 7) show that the mean value of the four variables, which are the subjective factors influencing the listening and speaking skills can be arranged from high to low in this order: learning attitude ($M = 3.95$), learning motivation ($M = 3.61$), learning methods and strategies ($M = 3.58$), the autonomous learning situation ($M = 2.71$). Except for autonomous learning, the values of the rest of the variables exceed the critical value (mean value $M > 3.00$).

Table 7: Descriptive statistics.

	N	Average	SD
Learning attitude	147	3.95	0.681
Learning motivation	147	3.61	0.500
Learning methods and strategies	146	3.58	0.584
Independent learning	146	2.71	0.597

As for the learning attitude ($M = 3.95$), most students have a strong desire to improve their English listening and speaking skills. As for the learning motivation ($M = 3.61$), the students have clear learning motivation. As for the learning method and strategies ($M = 3.58$), most students consider that their own learning methods and strategies need further adjustment and improvement. As for the autonomous learning ($M = 2.71$), $M < 3.00$ indicates that most students think they could have done better in terms of active learning, which requires further improvement.

CONCLUSIONS

It can be seen that in the research variables, there are two main groups of factors that affects students' English listening and speaking skills: the subjective factors and the objective factors. The subjective factors include learning attitude, learning methods and strategies, and autonomous learning ability; and the objective factors include social demand, teachers' vocational skills and teaching resources, etc.

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