

RESEARCH ON THE INFLUENCING FACTORS OF BILINGUAL TEACHING EFFECT BASED ON STRUCTURAL EQUATION MODEL – TAKING BILINGUAL SALES MANAGEMENT COURSES FOR EXAMPLE

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ABSTRACT. *Under the requirements of the new pattern of global economy, the outstanding ability to use foreign language to solve professional problems has become more and more popular. Universities have the responsibility to cultivate students who meet the needs of society. And sales management is an important part of the international trade of enterprises, which can promote the enterprise to conduct their work more efficiently in international trade. Therefore, effective bilingual teaching modes for sales management have been carried out in many universities. However, what factors can significantly affect the teaching effect of sales management course is still vague. We use structural equation modeling to explore the main factors affecting the quality of bilingual sales management course teaching, which is a typical bilingual course in the syllabus of business school. We found that school resource allocation, teacher level, student learning attitude and bilingual mode were the main influencing factors of bilingual sales management classes. Therefore, according to these factors, we give some suggestions to improve the effect of bilingual teaching.*

Keywords: Bilingual sales management course, Structural equation modeling, Teaching effect, Influence factor

1. **Introduction.** With the rapid development of society, the role of foreign languages has gradually become prominent. The Ministry of Education promulgated *Several Opinions on Further Strengthening Undergraduate Teaching in Higher Education* in 2005, and it is mentioned that the quality of bilingual education courses should be improved and the number of bilingual education courses should continue to be expanded [1]. It shows that the market has an urgent need for compound talents who are familiar with international languages and have professional knowledge [2]. Some scholars have studied the problems of bilingual teaching. Zhang found that students' abilities inconsistent with teaching requirements were one of problems in bilingual teaching [3]. Lan proposed to attract students' interest by combining modern network technology to assist teaching before and after class [4]. There is also some literature that studies the factors affecting bilingual teaching effect. Li found that students' English language proficiency had a significant impact on learning attitudes toward bilingual courses, but it only one-sidedly discussed student factor and did not continue to consider other factors [5]. Hu and Chen studied the important factors affecting the "Introduction to E-Commerce" course from four

aspects: students' enthusiasm for learning, teachers' professional level, teachers' foreign language level and suitability of teaching materials, but it did not consider whether the school resources allocation would have an impact [6]. Madrid and Julius conducted a survey on teachers and students respectively, and found that teachers' language ability, work commitment, students' enthusiasm for learning, and students' feedback are the influencing factors; however, there was a lack of ranking for the influence of these factors [7]. Although the above studies have analyzed the influencing factors of bilingual teaching, most of them are at the level of experience presentation, and some empirical studies are not precise enough for variable selection.

This paper selects the sales management course as an example, because sales management can promote enterprises to work more scientifically in international trade. However, there are still many problems to be solved in bilingual sales management teaching. 1) Teachers' classroom experience and foreign language expression skills are defective. When the content of the foreign language is difficult to understand and the students' feedback is not timely, classroom experience and expression skills play a prominent role. 2) Students are not active in learning bilingual professional courses. On the one hand, there is a lack of supervision and assessment before and after class, and on the other hand, with the difficulty of professional knowledge and the limitation of their own foreign language proficiency, many students' interest and attitude towards bilingual courses are greatly reduced. 3) The school resource allocation is backward and lack of practical arrangements. Many schools are still dominated by teachers. The selection of curriculum materials is unreasonable, and the curriculum lacks cases as practical guidance. 4) The arrangement of bilingual teaching mode is not reasonable. Many bilingual courses in schools are often just a simple patchwork of foreign language and professional courses, which makes the courses boring and increases the learning difficulty for students. Thus, this paper uses structural equation modeling to explore the diverse and not directly measurable influencing factors in the evaluation of teaching effect of bilingual sales management course, so as to provide suggestions for improving the teaching effect.

2. Hypothesis and Theoretical Model Construction. The evaluation of the teaching effect of bilingual sales management course can be started from the factors of teachers, students, schools and bilingual mode [8]. In order to further analyze the strength of each factor and the degree of cross-influence among these factors, this paper uses structural equation modeling to empirically validate and analyze the interrelationships among the factors.

2.1. Variable declaration. There are four evaluation objects as shown in Figure 1.

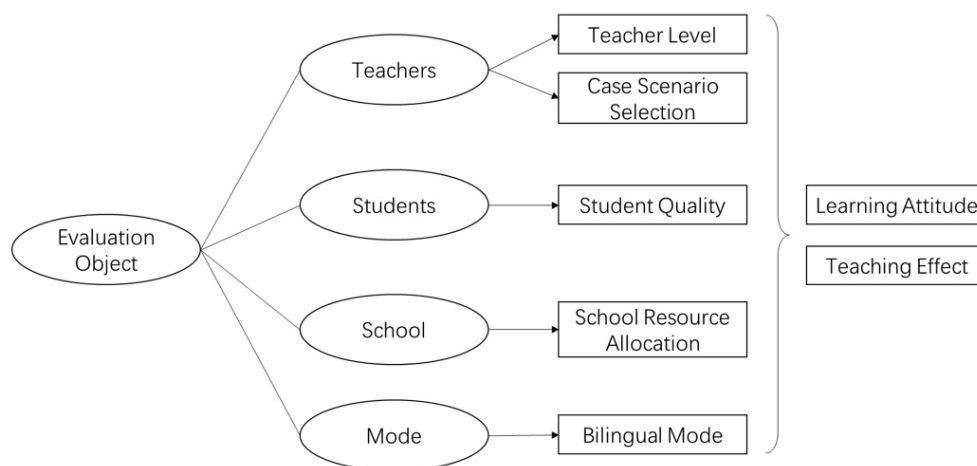


FIGURE 1. Relationship between evaluation object and latent variable

Teachers are the guides and leaders of teaching activities, and teacher level (such as professional knowledge level) may affect students' learning attitude and teaching effect [6,7]. Thus, it can be hypothesized that

H1: *Teacher level has a positive influence on learning attitude*

H2: *Teacher level has a positive influence on teaching effect*

Students are the subject and direct experiencers of teaching activities, and student quality is a direct factor influencing their attitudes towards learning [9]. Whether the student's professional knowledge is solid and the acceptance of bilingual teaching may have an impact [5]. Thus, it can be hypothesized that

H3: *Student quality has a positive influence on learning attitude*

Schools are the planner of bilingual teaching resource allocation. Appropriate use of resources can assist in teaching [8]. Thus, it can be hypothesized that

H4: *School resource allocation has a positive influence on teaching effect*

Case teaching is the key to sales management courses. Both the quantity and quality of cases can directly affect the teaching effect. Meanwhile, the cases selected by teachers can also directly affect students' interests and attitudes [9]. Thus, it can be hypothesized that

H5: *Case scenario selection has a positive influence on learning attitude*

H6: *Case scenario selection has a positive influence on teaching effect*

Bilingual mode is the carrier of bilingual teaching effect. The selection of teaching materials and the bilingual proportion in the curriculum should be given priority [6,8]. Thus, it can be hypothesized that

H7: *Bilingual mode has a positive influence on teaching effect*

Positive learning attitudes lead to a good learning atmosphere. Stimulating students' participation in the case and attention to bilingualism will make bilingual teaching more effective [7]. Thus, it can be hypothesized that

H8: *Learning attitude has a positive influence on teaching effect*

Based on the above analysis, a conceptual model of bilingual sales management teaching effect and its influencing factors is constructed, as shown in Figure 2.

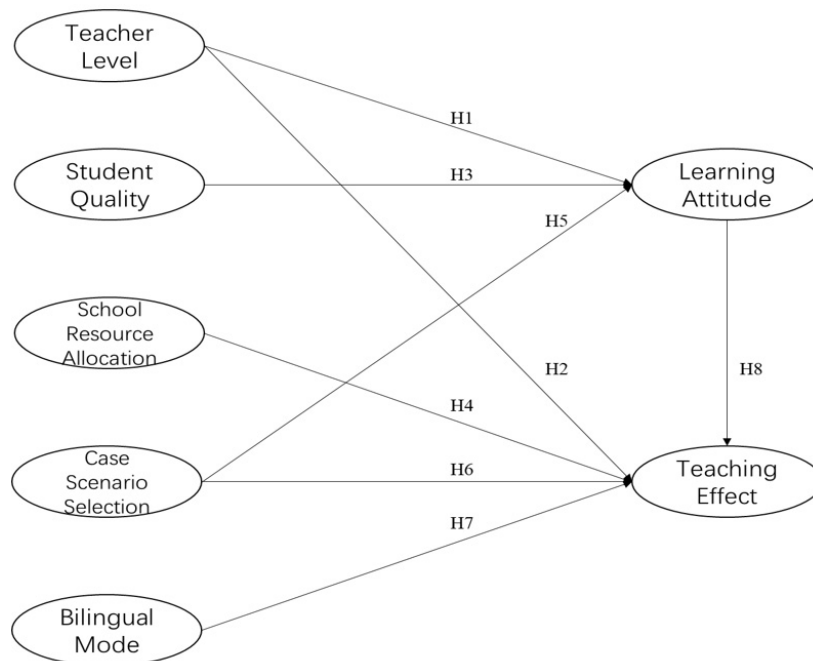


FIGURE 2. The conceptual model of influencing factors of bilingual sales management

In this paper, 7 latent variables and 26 observed variables are designed. The structural equation modeling is composed of 5 exogenous latent variables, including teacher level, student quality, school resource allocation, case scenario selection and bilingual mode, and 2 endogenous latent variables, including learning attitude and teaching effect. The latent variables, observed variables and their meanings of the model are shown in Table 1.

TABLE 1. Latent variables, observed variables and their meanings

Latent variable	Observed variable	Definition of observed variable
Teacher level	A01 Professional knowledge level	Level of professional knowledge demonstrated by teachers
	A02 Foreign language ability	Foreign language proficiency demonstrated by teachers
	A03 Prepare content before class	Teacher's arrangement of preview content before class
	A04 Language charm in class	Language charm of teachers in the course
	A05 Control over the teaching schedule	Teacher's control over the teaching schedule
	A06 Test of teaching effect after class	According to the test results, understand the actual situation of each student
Student quality	A07 Professional knowledge	Student's professional knowledge
	A08 Acceptance of bilingual teaching	Students' acceptance of bilingualism
	A09 Acceptance of case teaching	Students' acceptance of case teaching
Learning attitude	A10 Participation in case discussions	Students' enthusiasm for participating in class case discussions
	A11 Student effort	Students' efforts to answer questions and listen
	A12 Attention to foreign language learning	Students' attention to foreign language learning
School resource allocation	A13 Supply of teaching equipment	The school's provision of equipment for the course
	A14 Informational teaching tools	School provides online technology to assist in teaching
	A15 Selection of teaching hours	School's term schedule for courses
	A16 Arrangement of the curriculum system	The construction of curriculum system
	A17 Design of teaching model	Design of the school's teaching model
	A18 Career planning	School provides some assistance to students in their career planning
Case scenario selection	A19 Number of case scenarios	Students' feelings about the number of case scenarios
	A20 Quality of case scenario	Students' perception of the quality of case scenarios
	A21 Operability of case scenario	Students' feelings about the operability of case scenarios
Bilingual mode	A22 Rationality of bilingual teaching material	Whether the bilingual teaching materials selected by teachers are comprehensive and the cases are new and typical
	A23 Way of adopting bilingualism	Whether the arrangement of teachers adopting bilingualism in the classroom is reasonable
	A24 Proportion of bilingualism in class	The teacher's arrangement of the proportion of foreign languages in class
Teaching effect	A25 Foreign language proficiency improvement	Students' foreign language skills have been improved
	A26 Ability to solve professional problems	Ability of students to use bilingualism to solve difficulties in sales management

2.2. **The model.** In this paper, we use structural equation modeling to determine the interrelationship between multiple factors. Structural equation model describes the relationship between latent variables η , ξ and observed variables x , y . The relationship between the variables in the model is as follows:

$$\eta = B\eta + \Gamma\xi + \zeta \tag{1}$$

$$y = \Lambda_y\eta + \varepsilon \tag{2}$$

$$x = \Lambda_x\xi + \delta \tag{3}$$

η and ξ are the vectors of endogenous and exogenous latent variables, respectively. B is the endogenous latent variable influence coefficient matrix, reflecting the relationship between endogenous latent variables. Γ is the exogenous latent variable influence coefficient matrix. ζ is the random error term matrix. y is the endogenous indicator matrix. x is the exogenous indicator matrix. Λ_y and Λ_x are the endogenous and exogenous index factor load matrices, respectively. ε and δ are the measurement error vectors. In this paper, 7 variables, such as teacher level, are latent variables, with learning attitude and teaching effect as endogenous latent variables and the rest as exogenous latent variables. 26 variables, such as professional knowledge level, are observed variables.

3. Empirical Analysis.

3.1. **Research methods.** This research used a survey method conducted in Dalian with respondents who were students offered bilingual sales management courses. The questionnaire was designed as a Likert scale (1-5) where the scales of 1 and 5 mean strongly disagree and agree, respectively. There are 26 questions in the Appendix I corresponding to 26 observed variables. After eliminating invalid questionnaires with incomplete values, there were 120 valid samples which were used to conduct the empirical analysis.

3.2. **Reliability and validity tests.** In this study, we used Cronbach’s alpha coefficient method to test the internal consistency reliability of the questionnaire.

As presented in Table 2 and Table 3, the questionnaire data have good internal consistency and structural validity, which can be used for further analysis.

TABLE 2. Reliability analysis

Latent variable	Number of observed variables	Cronbach’s α coefficient
Teacher level (TL)	6	0.862
Student quality (SQ)	3	0.852
School resource allocation (SRA)	6	0.919
Case scenario selection (CSS)	3	0.893
Bilingual mode (BM)	3	0.795
Learning attitude (LA)	3	0.820
Teaching effect (TE)	2	0.895
Total	26	0.969

Note: Cronbach’s alpha coefficient greater than 0.7 indicates high internal consistency [10].

TABLE 3. KMO and Bartlett’s test

Kaiser-Meyer-Olkin measure of sampling adequacy	0.913
Approx. Chi-Square	858.625
Bartlett’s test of sphericity	df
	381
	Sig.
	0.000

Note: KMO value greater than 0.7 indicates good validity [10].

4. Model Construction and Analysis.

4.1. **Model construction.** The path standardization coefficients and the model are shown in Figure 3, where e1-e28 are error variables. To verify the fit of the model more accurately, the commonly used goodness-of-fit indicators were selected, as shown in Table 4.

From Table 4, the ratio of chi-square to degree-of-freedom is 2.253, less than 3. The GFI (goodness fit index) is greater than 0.80. The AGFI (adjusted goodness fit index) is greater than 0.80. The NFI (normed fit index) is also greater than 0.80. The TLI (Tucker-Lewis index) and CFI (comparative fit index) are both greater than 0.90, and the RMSEA

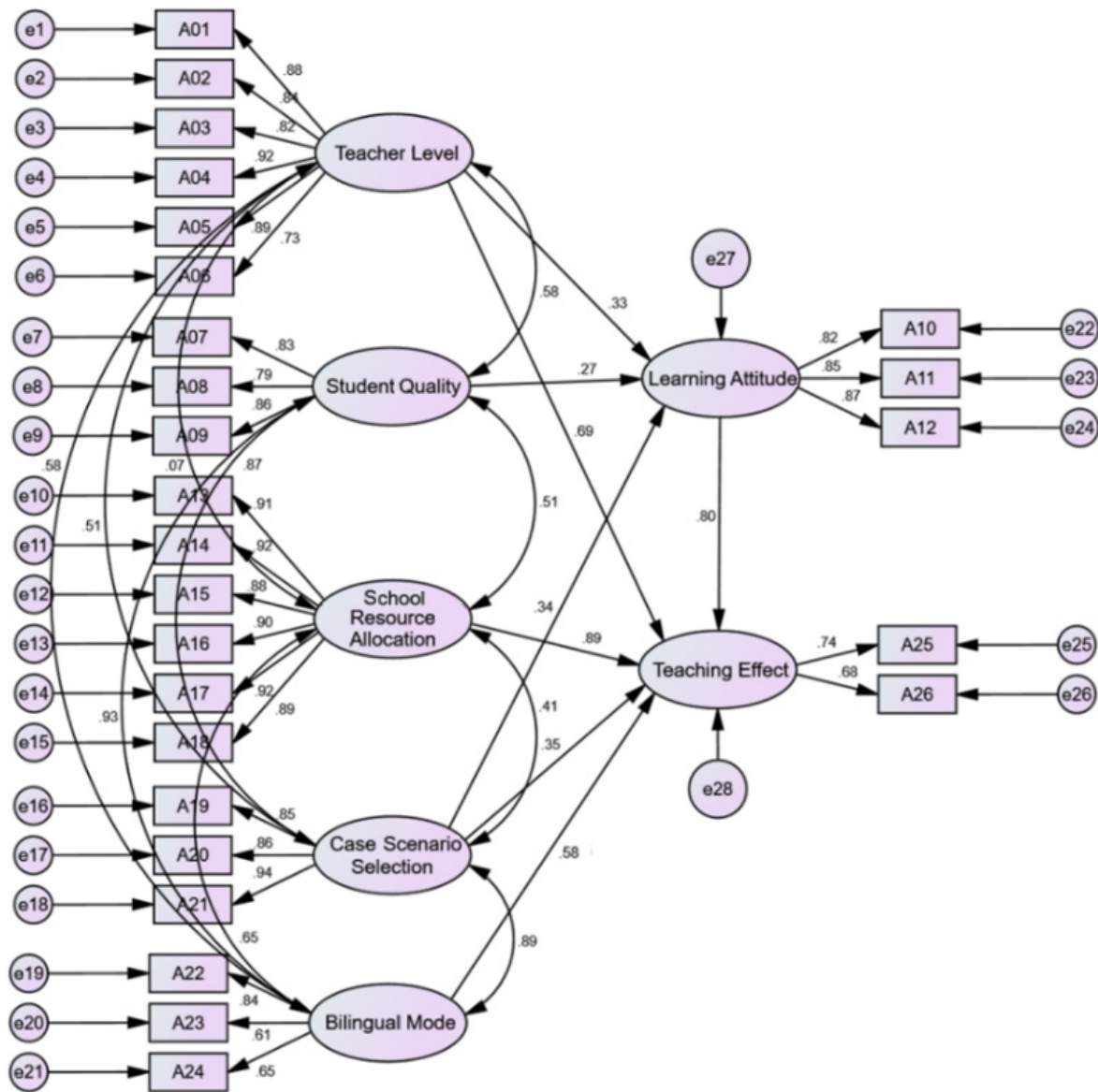


FIGURE 3. Structural equation path of factors influencing the teaching effect of bilingual sales management course

TABLE 4. Structural equation modeling fitting effect

Indicator	χ^2/df	GFI	AGFI	NFI	TLI	CFI	RMSEA
Criteria	< 3	> 0.80	> 0.80	> 0.80	> 0.90	> 0.90	< 0.08
Fitting result	2.253	0.940	0.896	0.959	0.972	0.980	0.068

(root mean square error of approximation) is less than 0.08. The above illustrates that the data pass the test and the structural model of this research fits well with the observed data.

4.2. Data processing. From Table 5, we know that H1, H2, H3, H4, H5, H7 and H8 passed the hypothesis tests, and each exogenous latent variable had a significant positive effect relationship with the corresponding endogenous latent variable. However, for H6, it failed to pass the test, indicating that the case scenario selection did not show a significant effect relationship with teaching effect.

TABLE 5. Structural equation modeling fitting effect

Hypothesis and latent variable path	Path coefficient	Standardization path coefficient	P value	Conclusions
H1: LA \leftarrow TL	0.276	0.331	***	Supported
H2: TE \leftarrow TL	0.694	0.686	0.005	Supported
H3: LA \leftarrow SQ	0.328	0.274	0.015	Supported
H4: TE \leftarrow SRA	0.983	0.892	0.018	Supported
H5: LA \leftarrow CSS	0.349	0.342	***	Supported
H6: TE \leftarrow CSS	0.431	0.348	0.436	Refused
H7: TE \leftarrow BM	0.687	0.583	0.004	Supported
H8: TE \leftarrow LA	0.977	0.804	***	Supported

Note: *** indicates that $P < 0.001$. If $P < 0.05$, it means that the test can be passed.

4.3. Results analysis. From the above data analysis, the following relevant conclusions and suggestions can be drawn.

1) The great teacher level is a powerful guarantee to improve the teaching effect. The regression coefficient of teacher level on teaching effect is 0.686. Among the 6 observed variables of teacher level factor, the highest regression coefficient is for language charm of teacher in class (A04), which indicates that language charm does reflect the teacher level to a certain extent. Therefore, the teachers' language in the classroom should be infectious and mobilize the classroom atmosphere. Meanwhile, the pace and difficulty of the course should be adjusted in time through the feedback of students' learning during and after the class. In the case teaching process, teachers should also pay attention to the operability of the cases, with the cooperation of the school, and lead students to some international sales business enterprises, such as cross-border e-commerce enterprises, to familiarize with the company sales business process and learn practical experience.

2) School resource allocation has the greatest impact on teaching effect, and information technology education tools are the focus of attention. Modern educational tools become increasingly abundant. Access to online course resources can enhance students' learning interest and independent learning ability. In the process of improving bilingual sales management teaching, schools can combine informative education tools, make full use of online teaching platform and introduce teaching equipment such as business practice sandbox, platform and virtual scenes related to their majors to enrich teaching mode and improve teaching effect, so that students can have the personal experience in immersion teaching.

3) Learning attitude and bilingual mode have an impact on teaching effect, and it is meaningful to spread bilingual teaching. The regression coefficient of learning attitude on teaching effect is 0.804. Among the three observed variables of the learning attitude factor, the regression coefficients of participation in case discussions (A10), student effort (A11) and attention to foreign language learning (A12) are all high.

Meanwhile, the bilingual mode also has an impact on teaching effect with the regression coefficient of 0.583. Teachers should first have a general understanding of the foreign language level of the students, and take the average or plural of students' foreign language level as a reference. Accordingly, teachers decide bilingual mode of the course. Flipped learning can be adopted in the class, because the student-centered mode can improve learning attitude and enhance teaching effect [11]. By fragmenting learning tasks, relevant materials such as new specialized vocabulary phrases can be released via applets or apps before class. By assigning discussions or questions in class, teachers can also keep track of students' learning and allocate teaching time effectively.

5. Conclusions. This research concludes that school resource allocation, teacher level, learning attitude and bilingual mode are the most important factors influencing the teaching effect of bilingual sales management course, then student quality and case scenario selection can have a certain impact on learning attitudes. Thus, teachers need to improve their own quality and business skills firstly, and case scenarios should be carefully designed. Then, the bilingual mode should be appropriate. Teachers should follow up the learning feedback of each student. Moreover, schools should pay attention to the school resource allocation and provide relevant resource support reasonably. Teachers can assign fragmented learning tasks to integrate into students' daily lives. In the future, we can continue to explore the impact of case teaching on bilingual sales management course and students' career planning, to explore the study with the perspective of the employer on the talent-demand side. In a word, bilingual teaching is the trend of teaching reform in sales management courses, and it is also an important channel for cultivating talents in the field of international sales.

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Appendix I.

Bilingual sales management course questionnaire

		1	2	3	4	5
		Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
1	It is very important for teachers to be logical and have a high level of professional knowledge in class.					
2	Accurate pronunciation and easy-to-understand explanations are very important for teachers.					
3	Adequate number of case scenarios is very important in class.					
4	The selection of high-quality, novel, typical and relevant cases is very important in class.					
5	The case scenario with good operability is very important in class.					
6	In class, reasonable bilingual mode arrangement is very important.					
7	A reasonable proportion of foreign language is very important in class.					
8	It is very important for teachers to arrange learning content before class to ensure the quality and speed of teaching.					
9	It is important for the teacher to adjust the pace of the lesson according to the students' response.					
10	In the process of learning professional courses, my knowledge reserve and understanding have reached the requirements of the course, which is very important.					
11	In case teaching, it is important for students to be able to think about the case in relation to what they have learned.					
12	In case teaching, the active participation of students in class discussions is very important.					
13	It is very important for teachers to use their language charm to attract students' interest in class.					
14	In class, it is very important for students to make sure that they understand and respond to the teachers' spoken expressions.					
15	Students' concentration and effort are very important in class.					
16	It is very important for teachers to keep track of students' learning situation through tests before the end of class.					
17	It is very important for students to pay attention to the learning of English knowledge before and after class.					
18	It is very important that the school has abundant resources and sufficient teaching equipment to fully meet the needs of practical teaching.					
19	The combination of complete information technology teaching tools is very important.					
20	Reasonable arrangement of teachers' teaching hours is very important.					
21	It is very important that the course materials are reasonably selected, and the knowledge points are comprehensive and detailed, and the cases in the book are not obsolete.					
22	The school's curriculum system is very important for personal development.					
23	The design of bilingual mode can help students better master the knowledge and apply it.					
24	Incorporating bilingualism in teaching is very important for students to adapt to the needs of society.					
25	This course improves students' professional foreign language level.					
26	This course enhances students' ability to use bilingualism to solve sales management problems.					