The Development of Instructional Model According to Immersive Learning in Virtual Reality Environment to Enhance Tour Guide Students' Oral Communication Ability

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Abstracts

The objectives of this research are: 1) to investigate the status of oral communication skills of undergraduate tour guides in Hezhou University and the views of professional teachers based-on immersive-learning teaching model in the virtual environment; 2) to develop the immersive-learning teaching model(PIE) in the virtual reality environment; 3) to implement the course teaching experiment and to evaluate the efficiency of the PIE teaching model.

This research instruments includes 1) questionnaire on oral expression skills of undergraduate tour guides; 2) questionnaire on oral communication teaching model of professional teachers; 3) development documents of teaching model, use instructions, virtual scenic spot guide explanation teaching plan, virtual accompany service guide teaching plan; 4) pre-test and post-survey questionnaire of oral communication skills of undergraduate tour guides. Research data collected were analyzed by statistical measures such as percentage, mean, standard deviation, t-test values, and p-values. The study finds that the overall performance of tour guide oral communication skills is moderate at Hezhou University. The sample population t-test results also show that the PIE teaching model is significant for enhancing the undergraduates tour guide oral communication skills with t-test($\overline{x}$= 65.56 to 80.33, t=14.80, p=.000).

Keywords: Immersive learning; Tour guide oral communication; Virtual reality environment; PIE teaching model.

Introduction

In the management of higher education in the field of tourism, emphasis is placed on the development of tourism language for tourism students so that they can use it effectively. The current management of education has paid a lot of attention to the Immersive Learning. Immersive Learning management is a simulated environment by virtual technologies with sociotechnical-pedagogical usability which enhances learning and Cultural intelligence Quotient (CQ). Therefore, it is highly expedient to develop instructional model according to immersive learning in virtual reality environment to enhance the oral communication ability of tour guide students.

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It is recognized that in the modern world that is full of changes, developments and technology, communication is an important factor in helping people and organizations to progress successfully in business, sales and service. In the field of tourism education, emphasis is placed on the development of tourism language for tourism students so that they can use it effectively for their future career. In particular, tour guide oral communication skill is very important as it is an essential tool of the tourism profession. In addition, the current management of education has paid a lot of attention to the Immersive Learning. Immersive Learning management is a simulated environment by virtual technologies with sociotechnical-pedagogical usability which enhances learning and Cultural intelligence Quotient (CQ). Therefore, when considering the concepts of the immersive learning in virtual reality environment and oral communication ability, it is found that it is an approach that can promote oral communication ability. It is therefore highly expedient to develop instructional model according to immersive learning in virtual reality environment to enhance the oral communication ability of tour guide students.

Constructivism regards teaching as the process of students' active construction of knowledge. Classroom teaching of teachers is turn "teaching" into "learning" as the center, which is students be become the main body of classroom activities. The role of teachers changes from "teaching" to "guidance" of students which is created teaching situation for students immersive-learning. The traditional teaching model turn "teacher center" to "student center", the teaching ought to change focusing on learning results to simultaneously focusing on learning process (Zhang, 2001: 32-36). Situational learning theory shows that creating a specific environment related to the teaching content, under the guidance of the teacher, students can actively participate in, experience success and gain development in a meaningful learning process around challenging learning topics. The situation of teaching design should first consciously connect with learner's experience and achieve the purpose of integrating knowledge through the situation(Li, 2013: 81-91).

With artificial intelligence and virtual reality (VR) be further deeply integrated with education, it bring more effective learning interaction and more realistic learning experience to students to promote profound changes in the teaching method for students immersive learning in virtual environment. The key to immersive learning is to create the required learning situation for learners, and use information technology, artificial intelligence, VR technology and mobile communication technology to create a specific teaching situation, so that students can fully focus on the course learning content, so that course teaching can achieve twice the result with half the effort. The teaching ways have been researched in virtual environments (Liu, 2021: 171-180; Wang, Cao, and Chen,2022: 80-88). Zhang (2017: 63-68) discuss the teaching ways of oral communication teaching situation in language teaching. Cheng, Liu, and Li (2022: 171-180) create a "new situational teaching mode" with three-dimensional deep integration of "high technology, high beauty and high cognition". Shao and Wang(2017: 137-144) had taken the construction of 3D virtual platform to study the situational teaching model for application in Russian teaching. It can be predicted that, with the in-depth development of "Internet + education", the virtual reality situation has been further integrated and developed in language and vocational education.

It has promoted the development of online virtual tourism. The practice teaching of tour guide has also developed in virtual reality environment at high profession education. Educational scholars at home and abroad have used E-tourism to construct professional scenes such as tourist attractions and hotels, and developed courses related to tourism management

based on E-tourism. The application of tourism professional training are explored in virtual reality environment (Gu, Zhang, and Zhou,2022: 122- 05; Zhuang, 2021: 79-81).

Research Objectives

1. To investigate the status of oral communication skills of undergraduate tour guides in Hezhou University and the views of professional teachers based-on immersive-learning teaching model in the virtual environment.
2. To develop the immersive-learning PIE teaching model in the virtual reality environment.
3. to implement the course teaching experiment and to evaluate the efficiency of the PIE teaching model.

Research Methodology

Research instruments

The research instruments includes 1) questionnaire on oral expression skills of undergraduate tour guides be made from the "China's Standards of English Language Ability" of the Ministry of Education of the People's Republic of China has twenty items; 2) questionnaire on oral communication teaching model of professional teachers has thirteen items; 3) development documents of PIE teaching model, use instructions, virtual scenic spot guide explanation teaching plan, virtual accompany service guide teaching plan; 4) pre-test and post-survey questionnaire of oral communication skills of undergraduate tour guides.

Population and sample

The population includes professional teachers and undergraduates in tourism and sport college at Hezhou university. The college of tourism and sport has 32 teachers of management major, including 13 tourism management, 12 hotel management and 7 public administration management. The college of tourism and sport has three majors related to tourism, namely tourism management, hotel management and public service management, which has 718 students.

The sample of students is two hundred ten of undergraduates who study in tourism and sports college at Hezhou University at the semester 1 academic year 2023. The distribution of the student population groups is shown as follows, most of the population is female students about 77.14 percentage of the total, grade of 2023’ year is 63.81 percentage of total, more than half of them are tourism management majors about 53.81 percentage of the total, while participants from other majors are the least about 21.90 percentage of the total. The sample of profession teacher is twenty teacher who volunteer for the survey, they are almost female, accounting for 60 percent of the total; the age from 31 to 50 years old are the most common, accounting for 65 percentage of the total. In terms of academic degree, the most respondents have master's degree, accounting for 70 percentage of the total; The largest number of respondents have the lecturer title, accounting for 60 percentage of the total, associate professors accounting for 30 percentage of total, professors accounting for 10 percentage of the total.

Data Collection

In this study, data collection includes data on the status of students' tour guide oral communication skills and implement data before and after tests in the PIE teaching model.

1.The data collection on the status of students' tour guide oral communication skills is carried out the following steps:

1) The researcher translate translation the questionnaire into Chinese with instructions for filling.

2) The researcher released the questionnaire to the participants through the online survey platform of China Questionnaires Star and collected the questionnaire information. The researcher informed the participants of the purpose of the survey and the use manual of the questionnaire, and reminded the participants that the results of the survey were not related to the results of the optional courses.

3) Publish the website of the questionnaire, and ask participants to relax and fill in the questionnaire and submit it online through the network.

4) Researchers collect questionnaire data through the network platform.

5) In addition, the researchers made further interviews with the questionnaire's professional teachers as needed to collect a comprehensive view of the teaching model of developing immersive learning.

2. The data collection on implement data of per-test and post-test in the PIE teaching model has three step:

1) To make students finish the survey of tour guide oral communication before implement teaching experiments in the PIE teaching model.

2) To make students fill the survey of tour guide oral communication again after finishing virtual scenic spot guide explanation teaching plan and virtual accompany service guide teaching plan in the PIE teaching model.

3) The data of the above two steps are collected on the online questionnaire star platform.

Data analysis

In the study of the development of instructional model according to immersive learning in virtual reality environment to enhance tour guide students’ oral communication ability, the researcher studied the documents concerning the following.

Part 1: Analysis results of the investigation on the current situation, expectations and needs of tour guide students’ oral communication ability.

Part 2: Analysis results of developing the instructional model according to immersive learning in virtual reality environment to enhance tour guide students’ oral communication ability.

Part 3: Analysis results of the evaluating the efficiency of instructional model according to immersive learning in virtual reality environment through the pretest and pro-test of tour guide students’ oral communication ability after implementing by the teaching model.

The data is analyzed by statistical measures such as percentage, mean, standard deviation, T-test values, and p-values with the tool of SPSS. The meaning of using the average value is as follows:

1) The average value of 4.51-5.00 indicates the ability is at the highest level.

2) The average value of 3.51-4.50 indicates the ability is at a high level.

3) The average value of 2.51-3.50 indicates the ability is at a moderate level.

4) The average value of 1.51-2.50 indicates the ability is at a low level.

5) The average value of 1.00-1.50 indicates the ability is at the lowest level.

Results

Result of Part 1: Analysis results of the investigation on the current situation, expectations and needs of tour guide students' oral communication ability.

1. The analysis results of professional teachers' survey and interview opinions about students' oral communication skills and teaching model of oral communication.

According to professional teachers' interview, the mostly teachers consider that Oral communication skills are important for the career development of tour guide students about 90 percentage. They are not sure that students' satisfied with the current teaching model of oral communication skills for tour guides about 60 percentage. Teachers do not satisfy with the oral communication skills of tour guide students about 60 percentage. They think that the teaching model of oral communication skills keep up with the development of virtual reality technology only 30 percentage of total. They almost think that virtual tourism scenes can attract students' interest in learning about 90 percentage. They agree that it is helpful to enhance tour guide oral communication skills which take students to scenic areas for oral communication practice teaching about 90 percentage. Ninety percentage of the respondents consider that it is help to enhance students' oral communication skills be take students to tourist attractions, but 80 percentage of total think the cost be high. Ninety percentage of the respondents are familiar with teaching model of virtual simulation reality environment, and about 80 percentage agree that the teaching model could stimulate students' interest in learning. The responses about 90 percentage consider that the teaching model of virtual reality environment can enhance students' oral communication, and they agree to use the teaching model for carrying out their teaching tasks.

2.The result of undergraduates' survey on tour guide oral communication skills at Hezhou University, the details is as follow table 1 to table 6.

Table 1 mean and standard deviation of data analysis on Oral description skills

Dimension of Oral description skills	$\bar{x}$	S.D.	Interpretation
1) Students can accurately and smoothly describe the details of problems in life, such as customer complaints, accident disputes.	3.51	0.91	High
2) Students are able to provide descriptions of the visited locations and scenery to tourists accurately.	3.52	0.92	High
3) Students can tell historical allusions for tourists with vivid and interesting language be effectively attracted by the audience.	3.09	0.96	Moderate
4) Students can provide detailed explanations about national policies of tourism to tourists.	3.10	0.99	Moderate
5) Students can provide accurate comments for tourists about celebrities, historical sites, or cultural customs in the scenic area.	3.12	0.91	Moderate
Average total	3.27	0.81	Moderate

From Table 1, the average total of students' oral description skills is （$\overline{x}$=3.27; S.D.=0.81) be interpreted as moderate be including five item abilities. The ability of "Students are able to provide descriptions of the visited locations and scenery to tourists accurately" is interpreted as "high" by the mean value of （$\overline{x}$=3.52; S.D.=0.92). The ability of "Students can accurately and smoothly describe the details of problems in life, such as customer complaints, accident disputes" is interpreted as "High" by the mean of （$\overline{x}$=3.51; S.D.=0.91), too. The others dimension abilities are interpreted as "Moderate" in oral description skills.

Table 2 mean and standard deviation of data analysis on Oral description skills

Dimension of Oral instruction skills	$\overline{x}$	S.D.	Interpretation
1) Students are able to compare the advantages and disadvantages of different choices in daily life, such as traveling and shopping then clearly express the reasons for making decisions to tourists.	3.55	0.95	High
2) Students can use maps or travel guides to provide a detailed introduction of travel plans which are clear oral instructions on the methods, steps and procedures for tourists.	3.38	0.97	Moderate
Average Total	3.47	0.89	Moderate

From Table 2, the average total of oral instruction skills which is included two item abilities is （$\overline{x}$=3.47; S.D.=0.89) be interpreted as moderate. The mean of "students are able to compare the advantages and disadvantages of different choices in daily life, such as traveling and shopping then clearly express the reasons for making decisions to tourists" is （$\overline{x}$=3.55; S.D.=0.95) be interpreted as high, while the other mean is （$\overline{x}$=3.38; S.D.=0.97) be interpreted as moderate.

Table 3 mean and standard deviation of data analysis on Oral interaction skills

Oral interaction skills	$\overline{x}$	S.D.	Interpretation
1) Students are able to effectively communicate and negotiate on travel arrangements, product prices, and other related matters in business communication.	3.28	0.99	Moderate
2) Students are able to effectively negotiate verbally regarding compensation, liability determination and other matters when handling disputes.	3.23	0.95	Moderate
3) Students are able to flexibly and freely host events or receive interviews, and my language expression is fluent.	3.11	0.99	Moderate
Average Total	3.21	0.91	Moderate

From Table 3, the average total of students' oral interaction skills is （$\overline{x}$=3.21; S.D.=0.91) be interpreted as moderate. The students' oral interaction skills are included three dimension abilities, and they are interpreted as moderate by its means value.

Table 4 mean and standard deviation of data analysis on Oral communication strategies

Oral communication strategies	$\overline{x}$	S.D.	Interpretation
1) Students are able to select and organize appropriate information and perspectives which are included different purposes and audiences before giving a speech so as to be more persuasive.	3.16	0.96	Moderate
2) Students can choose or adjust their own ways of expression according to the other party's wording in a timely manner.	3.50	0.95	Moderate
3) Students able to choose appropriate expressions which are based on the other person's attitude, emotions and intentions in conversations.	3.64	0.89	High
4) Students can use witty and humorous language to avoid sensitive topics.	3.34	0.96	Moderate
5) Students are able to further explain and abstract concepts which are based on audience feedback.	3.29	0.95	Moderate
Average Total	3.39	0.83	Moderate

From Table 4, the average total of students' oral communication strategies is ($\overline{x}$=3.39; S.D.=0.83) be interpreted as moderate, be including five dimension abilities. The mean of "Students able to choose appropriate expressions which are based on the other person's attitude, emotions and intentions in conversations" is ($\overline{x}$=3.64; S.D.=0.89) be interpreted as high, while the rest of abilities are interpreted as moderate by its means value.

Table 5 mean and standard deviation of data analysis on Communication emotional control skills

Communication emotional control skills	$\overline{x}$	S.D.	Interpretation
1) Students can feel comfortable during the preparation for the conversation.	3.30	0.98	Moderate
2) Students can have confidence in facing conversations.	3.20	0.94	Moderate
3) During conversations, students can control my tension and stress.	3.21	0.95	Moderate
4) When the teacher asked us to talk, students felt very enthusiastic.	2.99	0.96	Moderate
5) In the face of unexpected events, students can handle them calmly without feeling nervous at all.	3.02	0.96	Moderate
Average Total	3.24	0.61	Moderate

From Table 5, the total mean of Communication emotional control skills is ($\overline{x}$=3.24; S.D.=0.61) be interpreted as moderate which including five dimension abilities. Each dimension ability of Communication emotional control skills is interpreted as moderated by its means value.

Table 6 Mean and standard deviation of undergraduate tour guide oral communication skills in overall

Dimension of tour guide oral communication skills	$\overline{x}$	S.D.	Interpretation
1) Oral description skills	3.27	0.81	Moderate
2) Oral instruction skills	3.47	0.89	Moderate
3) Oral interaction skills	3.21	0.89	Moderate
4) Oral communication strategies	3.39	0.83	Moderate
5) Communication emotional control skills	3.24	0.61	Moderate
Average Total	3.31	0.74	Moderate

From table 6, the average total of tour guide oral communication is ($\overline{x}$=3.31; S.D.=0.74) be interpreted as moderate be including five dimension abilities. All of the five dimension abilities are interpreted as moderate by its mean values, the mean of each dimension as follow, Oral description skills be ($\overline{x}$=3.27; S.D.=0.81), Oral instruction skills be ($\overline{x}$=3.47; S.D.=0.89), Oral interaction skills be ($\overline{x}$=3.21; S.D.=0.89), Oral communication strategies be ($\overline{x}$=3.39; S.D.=0.83) and Communication emotional control skills be ($\overline{x}$=3.24; S.D.=0.61).

Result of Part 2: Analysis results of developing the instructional model according to immersive learning in virtual reality environment to enhance tour guide students' oral communication ability.

According to the analysis of the current situation of the oral communication skills of tour guides in Hezhou University and the professional teachers' attitude towards the oral teaching of tour guides in the virtual environment, the researchers developed the PIE teaching model that is according immersive-learning to enhance the tour guide students' skills. The instructional model according to immersive learning in virtual reality environment to enhance tour guide students' oral communication ability is called the "PIE" teaching model, which include three steps: preparation before class, immersive learning and evaluation of post class . The teaching process logic of PIE teaching model as fig. 1 to show.

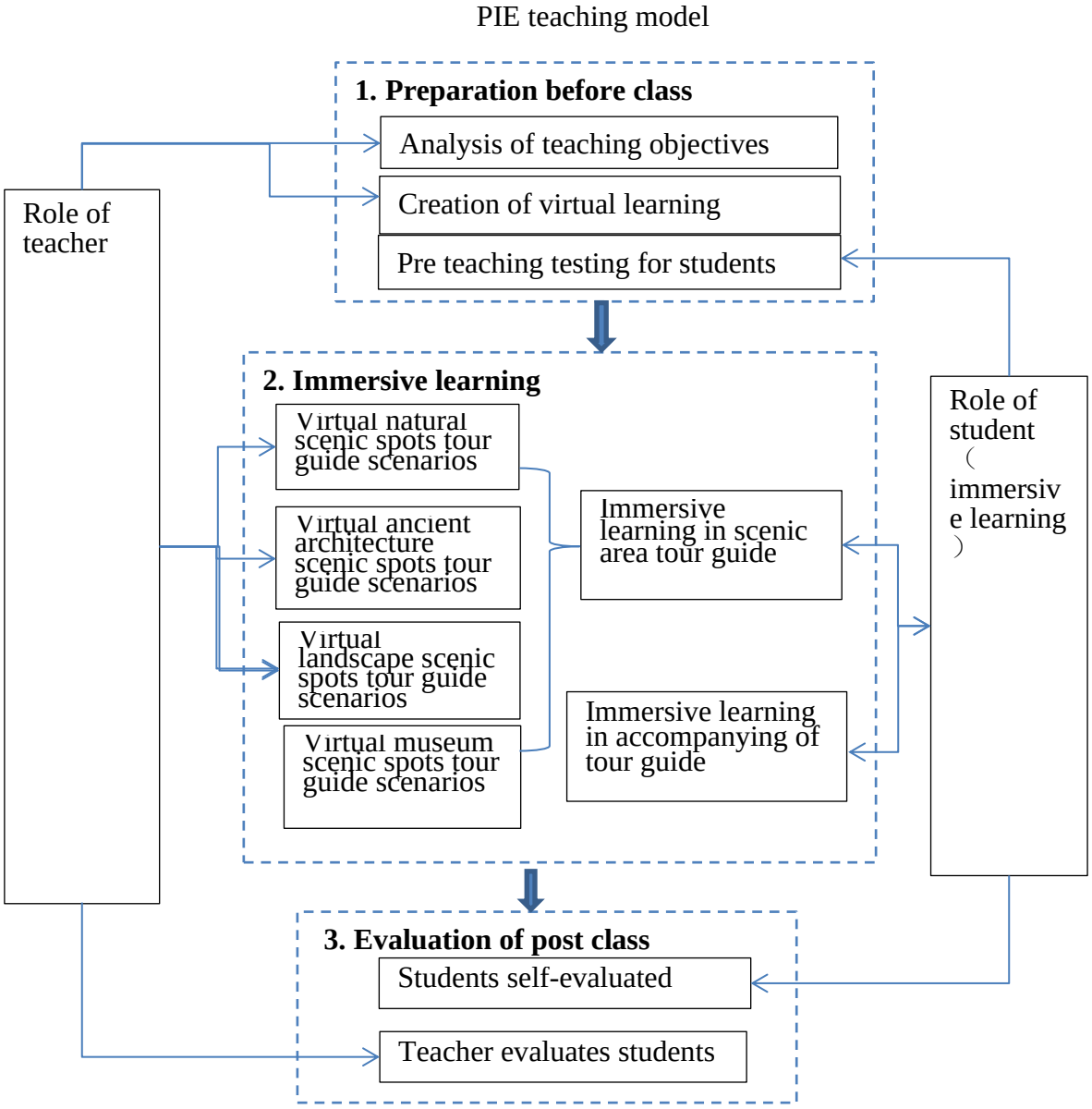

Fig. 1 PIE teaching model

1.Preparation before class(P)

Preparation before class includes three step, namely analysis of course teaching objectives, creation of virtual learning scenarios, and Pre teaching testing for students.

Step 1 Analysis of teaching objectives: the course "Simulated Tour Guide" aims to enable students to master the knowledge and skills of tour guides and cultivate their oral communication skills in tour guide business. The oral communication teaching objective is to improve the oral communication skills of tour guide students through simulated tour guide situational teaching, that is, students need to master the following five dimensions of skills:

Dimensions 1 of Oral description skills

Dimensions 2 of Oral instruction skills

Dimensions 3 of Oral interaction skills
Dimensions 4 of Oral communication strategy skills
Dimensions 5 of Oral communication and emotion control skills.

Step 2 Creation of virtual learning scenarios

Teachers use VR, AR technology, and resources from China's smart teaching network platform to create a virtual reality teaching scenario for tour guides. This research project includes lesson plan 1, virtual scenario for tour guides in scenic spots, and lesson plan 2, virtual scenario for accompanying tour guides.

Step 3 Pre-teaching testing for students

Explain the purpose of the course experiment to students and require them to cooperate in completing a survey questionnaire to test their oral communication skills as tour guides.

2.Immersive learning(I)

The course teaching model adopts a 5-step teaching method through simulation exercises: providing specific virtual scenes, introducing relevant knowledge, providing teaching objectives, allowing students to immerse themselves in self-learning and independently complete tasks. This study selects teaching projects such as group practice, handling skills for common tourism accidents, and tour guide explanation skills to enhance the oral communication skills of tour guide students.

Step 1 Student immersive learn in virtual reality scenic area of tour guide to enhance their oral communication skill. Through task driven and situational teaching methods, students use computer display screens and headphones to observe virtual virtual tourist attractions. Students use microphones and audio devices to interact with the "tourists" designed on the platform, describing the information of the scenic area, shopping guides, and dealing with "unexpected accidents" during the scenic area tour to tourists through virtual scenarios. Students can participate in experiential learning by playing the role of a "tour guide". Students can build knowledge from the virtual simulation environment and improve their oral communication skills. Virtual reality scenarios include:

1) Virtual Natural Scenic Spots Tour Guide Scenarios.
2) Virtual Ancient Architecture Scenic Spots Tour Guide Scenarios.
3) Virtual Landscape Scenic Spots Tour Guide Scenarios.
4) Virtual Museum Scenic Spots Tour Guide Scenarios.

Step 2 students immersive learn in virtual reality of accompanying a tour guide for building theirs oral communication strategy. Students complete virtual pickup and drop off services, as well as "explanation" services on the way to scenic spots through virtual tour guide roles in 3D tourism training rooms and simulated tour guide laboratories. Students of tour guide introduce tourism product shopping information to virtual tourists, handle unexpected events related to accompanying tours, and immerse themselves in self-learning through the creation of virtual scenes by teachers, enhancing the oral communication skills of accompanying tour guides.

3. Evaluation of post-class(E)

The teacher designed a survey questionnaire, and students self-evaluated their oral communication skills based on the questionnaire.

Result of Part 3: Analysis results of the evaluating the efficiency of instructional model according to immersive learning in virtual reality environment through the pretest and

pro-test of tour guide students' oral communication ability after implementing by the teaching model.

The researcher selected randomly 40 undergraduates who come from college of tourism and sport to finish experimental teaching with the PIE teaching model at the 1st semester of academic year 2023. The undergraduates have been conducted the pre-test of oral communication skills of the tour guide before the experiment. Then, the researchers used the teaching plan 1: virtual attraction tour guide and the teaching plan 2: virtual accompany tour guide to complete the teaching experiment with 10 class hours. After the completion of the experimental teaching, the undergraduates' tour guide oral communication skills were tested again to explain the effect of the experiment.

The undergraduates who participated in the teaching experiment are almost female be accounting for 82.5 percentage of the total. They are mainly enrolled in 2023' years accounting for 80 percentage of total. The participants almost study in tourism management be accounting for 87.5 percentage of total, but who study in hotel management be 12.5 percentage of total.

Analysis results are presented by comparing undergraduates' tour guide oral communication skills between before and after the experiment using T-test for one-sample group which provide significant difference between prior and after learning outcomes.

Table 7 Comparison between undergraduates' tour guide oral communication skills before and after implement through PIE teaching model

Post-test scores & Pretest scores	n	$\bar{x}$	SS.D.	t	df	Sig.
Post-test scores	40	64.98	17.33	14.80	39	.000
Pretest scores	40	0.33	1.91			

**represents statistical significant at 0.01 level.

From table 7, the value of post-test($\bar{x}$ = 80.33) is different from the pretest by mean post-test($\bar{x}$ = 64.98). There are significant differences between post-test and pretest with t =14.80 and p = 000 (**p < 0.01) in statistics. Then, it can be indicated that the given the experimental teaching of PIE teaching model has influenced undergraduates' tour guide oral communication skill at significance level 0.01 in statistics.

After analyzing and presenting data analysis results serving tree research objectives of the present study, it can be concluded and discussed as follows. Further, some approaches to tourist oral teaching are recommended base-on the findings.

Discussion

Discussion on the factor of influence to tour guide oral communication skills

From analysis the results of data, the oral communication skills of Hezhou college students are influenced by the following three factors. The first factor is practice-learning opportunity about oral communications.The tour guide oral communication skill level of undergraduate tour guides is influenced by practical teaching and teaching model in Hezhou University. Dewey(1937:1) propose to put forward to attach importance to social practice teaching. It is an important way to improve students' oral communication skills, which is strengthen taking students to real tourist attractions to carry out practical teaching. The students of Hezhou University cannot carry out practice teaching normally due to the high cost of transportation and accommodation in real tourist attractions, which is an important reason for undergraduate students to improve their oral communication skills. In the era of artificial intelligence, virtual reality technology is becoming more closely integrated with education. Ministry of Industry and Information Technology (2022:online) release policy to uses virtual reality technology to strengthen virtual practice teaching for enhancing the skills of Chinese students in China. The second factor is instruction model be used in tour guide oral communication teaching. The traditional teaching mode of Hezhou University cannot provide students with intuitive, vivid and realistic situation of tourist attractions, which affects students' interest in learning oral communication skills and their learning efficiency. The third factor is learning environment of oral communication. Teachers should integrate the teaching content with learning situation for providing an immersive learning environment to students to improve the learning efficiency. As well as, Wichean Intarasompan, and Jittawisut Wimuttipanya (2021: online), and Fu (2021: 204-205) used the learning environment of virtual tour guides to make students to learn and firmly to master the knowledge, theory and skill operation methods in the close to the real experience.

Discussion on to develop immersive learning teaching model in virtual reality environments for students

The successful development of teaching model follows three points. The first one is to identify the students' learning ability. Before developing the PIE teaching model, it is necessary to investigate the learning ability of students in Hezhou University, including their needs, interests, physical development characteristics and other aspects, those develop the teaching model according to the development of students' learning ability.The second is to identify immersive learning context media features. Identify the media characteristics required by learning activities and teaching resource selection strategies (Moore and Kearsley, 1996:2). The third is to confirm the teaching media environment strategies. The teaching media environment of the immersive learning teaching model in virtual environment includes two parts: hardware and software, which requires the technical support of computer and artificial intelligence. These software and hardware equipment should be rationally allocated according to the financial resources of the college. It should be neither cause economic waste, nor conservatively configure software and hardware, which will affect the learning experience and achieve the expected teaching effect.

Discussion on to implement and to evaluate the efficiency of the teaching model

First, to use immersive learning is helpful to improve students’ oral communication skills at the teaching of tourism management in virtual environment. The methods of immersive learning and teaching take to promote students' comprehensive language ability(Li, 2023: 81-91; Zhang, 2017: 63-68). The PIE teaching model experimental also are got the same results

by analysis of data. Second, immersive learning teaching model can promote students‘ mental health to develop well. The learning interest and confidence of the students who participated in the experiment have been improved. Hui (2020: 532-545) guided students to immerse themselves in learning by creating situations to stimulate students’ learning interest and motivation for strengthen students' confidence in learning, so as to improve their language ability. The third is to improve students' adaptability from the campus to the career field. Tosati, S., Sitthisopasakul, T., and Intarasompun, W. (2021: 124–137), Intarasompun, W., Muangnual, P., and Punchatree, N. (2022: 108–118), and Zhang, Guo, and Zhu(2020: 78-86) also used Immersive learning environment can simulate and restore the real workplace situation or skill operation scene, so that learners can subtly cultivate the key professional abilities in the virtual operation and interaction. The PIE teaching mode, which is the virtual reality environment according to immersive learning, creates the virtual scenic guide work scene, to take students from "learning" to "doing" in the virtual situation exercise to master skills of solving practical problems for enhancing the adaptability of tour guide major students from campus to tourism workplace

Conclusion

1.The overall performance of tour guide oral communication skills of undergraduates’ is moderate. Further, the level of undergraduates’ tour guide oral communication skills is related to the teaching model which is used by students and professional teachers according to the data analysis of questionnaires. Professional teachers have high expectations to use immersive learning theory to develop teaching model to enhance the undergraduates’ tour guide oral communication skills in virtual environment.

2.It is necessary to strictly abide by the principles, characteristics, teaching objectives and teaching arrangements when develop the teaching model of immersive learning in virtual reality environment.

3.The PIE teaching model is significant to enhance the undergraduates tour guide oral communication skills with T-test($\overline{x}$ = 65.56 to 80.33, t=14.80, p=.000). The difference between post-test scores and pre-test scores indicated that students with low-level skills had the most quickly improve in the scores of tour guide communication skills.

Recommendation

The findings from the present study bring twofold suggestions for applicability of the results.

For schools: Hezhou University should keep up with the development of technology in the information age to strength the construction of practical training equipment for virtual tourism scenes, and increase the investment in the equipment for modern teaching equipment, so that the school can provide a more convenient place for students to learn professional skills. The school encourages teachers to strengthen the use of artificial intelligence and virtual reality technology to develop the course of "guide operation" to teach students in accordance with their aptitude so as to improve the teaching quality of tour guide oral communication.

For the teacher: it become a trend which is tour guide vocational education field be have more and more open virtual imitation real training resources available, virtual imitation real training teaching into traditional training teaching classroom with the use of national wisdom education platform. Teachers need to have education teaching activity consciousness,

ability and responsibility which are used by optimization, innovation and change of digital technology.

For students: the immersive situation simulation teaching method is student-centered which has certain requirements on students' active learning ability and group cooperation consciousness. In addition, students' own attention, problem-solving ability and flexible adaptability in the practical training process are also the key factors restricting the smooth implementation of the immersive simulated realistic situation teaching method.

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