Experimental Design and Study of English O2O Teaching Mode for Higher Vocational Colleges under Multi-Media Environment

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Abstract

With the development and popularization of network-based information technology, the multi-media environment creates a good and independent English learning environment with its unique qualities of resource sharing, interaction and multimedia. The English course is of practical nature, which should give full play to the advantages of conventional humanistic teaching on one hand, and make the best of media resources and network resources on the other hand, so as to provide dynamic practice opportunity for students. The development of modern educational technology enables the establishment of increasingly more English online learning platforms, which are accepted by more and more people, realizing interaction between teaching and learning of English under network environment. This paper, in accordance with the design principles of O2O English teaching mode of higher vocational colleges, builds an O2O teaching platform and processes for higher vocational colleges. It also adopts the O2O teaching mode to perform teaching experimental design, and compares it with conventional teaching mode to verify the feasibility and effectiveness of the new mode. Experimental results show that there is a remarkable difference in the English scores between the experiment group and reference group after adopting the O2O teaching mode. The results further prove that the performance of O2O English teaching mode adopted for higher vocational colleges is rather good; and the adoption of the mode in English teaching by higher vocational colleges will greatly increase the learning score and initiative of the students of higher vocational colleges.

Keywords: Multi-media environment, Higher vocational colleges, O2O English teaching mode, Experimental design.

1. BACKGROUND OF LEARNING

1.1 Literature review

With the continuous development and improvement of information technology, an increasing number of colleges and universities start to introduce computer network-based multimedia facilities. It is particularly true for English teaching; during which, the employment of multimedia facilities enriches the teaching methods and contents of the listening course (Li, 2015). It is also encouraged using the multimedia as an auxiliary teaching method to perform classroom teaching design by the task-based teaching mode as proposed in the English Curriculum Standard (Zhang, 2007). Similarly, as a critical component of higher education, the education and teaching of higher vocational colleges should closely follow the trend of the times and development. It is an inevitable tendency to introduce computer multimedia into the English teaching of higher vocational colleges; because the computer multimedia-assisted teaching complies with the teaching theory of constructivism, is able to create ideological teaching conditions, and can significantly promote the teaching efficiency (Huang and Yu, 2005). It is for sure that the introduction of the new technology will generate various problems and difficulties in teaching practice, which require the teachers in higher vocational colleges to properly understand the mode of multimedia teaching, constantly learn relevant theories and put them into practice, further improve the English teaching mode with multimedia, and give full play to the advantages of multimedia-assisted teaching in an effective way. The adoption of multimedia multi-mode teaching mode by higher vocational colleges can further promote the classroom teaching performance in higher vocational colleges (Yang, 2014). Moreover, the educational objectives to enhance the comprehensive cultural quality of students can also be realized through the cultivation of multi-mode identification capacity; and the talents from higher vocational colleges can better meet the demand of the times and social development as well.
1.2 Study purposes

This paper adopts the literature review and experimental comparison methods to perform corresponding analysis and exploration, so as to study the actual effects of multi-media environment for English teaching in higher vocational colleges in a more intuitive and specific way. This paper also verifies the effectiveness and feasibility of multimedia technology through designing and comparing two groups of experimental objects with one group using the multimedia technology teaching mode and the other group using the conventional teaching mode. The higher vocational colleges should explore English teaching modes in order to conduct reform and innovation. The learning environment and students in higher vocational colleges have their own features, which require the English teaching process of higher vocational colleges to conform to the trend of educational development (Cao, 2014). Whereas, the public English teaching in higher vocational colleges of our country lacks good language learning environment at large currently; teaching resources are relatively limited and teaching design is simplex. What is more, the English foundation of students is weak, and some teachers are tired of large-class teaching, etc., which make the outcome of English teaching in some higher vocational colleges be not as good as expected. For some higher vocational colleges, they only complete English teaching instead of realizing teaching effects and objectives (Li, 2017). The appearance of multimedia technology brings new opportunities and injects new force for English teaching reform of higher vocational colleges. The reform of English teaching mode with multimedia technology can create vivid and lively language environment for English classroom teaching. Teachers can incorporate multiple teaching sources, including pictures, videos, audios, etc. based on teaching tasks and contents; and help students comprehend, accept and imitate the English knowledge points in a more vivid and simple fashion through creating ideological scenes (Liu, 2015). In addition, the performance of multimedia-assisted English teaching itself is the exploration and study of individualized English teaching mode, which relies on the technical platform of multimedia, fully respects the individual difference and self-direction during learning of students, and carries out student-centered English teaching. It is found that the adoption of multimedia technology is really helpful for students to get back their self-confidence, improve their initiative and enthusiasm, and enhance their culture consciousness and knowledge (Wu, 2010).

2. PRINCIPLES FOR DESIGN OF O2O ENGLISH TEACHING MODE FOR HIGHER VOCATIONAL COLLEGES

2.1 Internalize English knowledge for students

Students learn through sense-making instead of obtaining knowledge through teaching by teachers. O2O English teaching platform should be built under the multi-media environment for higher vocational colleges, so as to break down English teaching to obtain a part of knowledge through preview and exchange before class, the face-to-face teaching in class should not be simply about explanation, and interaction between teachers and students as well as collaboration among students should be reinforced. The leading role of teachers in conventional teaching mode should be changed to allow students to undertake the role of director and coordinator by means of independent learning activity, group discussion etc., so as to promote their learning initiative and enthusiasm, which will be helpful for the construction and internalization of English knowledge of students (Li et al., 2013).

2.2 Promote the realization of teaching at different levels

The English foundation of students of higher vocational colleges varies when they are just enrolled. However, classroom teaching is performed only under the conventional teaching mode, and the teaching contents are the same. According to theory of cognitive load, it is obvious to us that the student groups with good foundation carry lower cognitive load, resulting in waste of teaching time and resources; while student groups with weak foundation carry higher cognitive load, resulting in chaos for building knowledge hierarchy and difficulty for grasping knowledge points; which impedes ongoing English learning. By contrast, teaching videos and resources of various difficulty gradients can be provided based on teaching contents under the O2O teaching mode; and students can learn according to their own capacity.

2.3 Make the English learning be under control of students

It provides the most suitable teaching mode and sufficient learning time for students to grasp knowledge well. Thus, the employment of O2O English teaching mode for higher vocational colleges can provide students with an information environment to learn independently. Students are no longer restricted by group teaching mode, and can learn based on their own paces and by their own ways. They can learn and accumulate English knowledge.
anywhere and anytime, and receive test and perform expansion in a timely manner, which is helpful for students to keep their learning under control (Liu and Wang, 2014).

3. ESTABLISHMENT OF O2O ENGLISH TEACHING PLATFORM AND PROCESSES FOR HIGHER VOCATIONAL COLLEGES

3.1 O2O English teaching platform for higher vocational colleges

The abovementioned design principles are followed while designing the O2O English teaching platform for higher vocational colleges, so as to build an implementation system platform of self-directed exercise with teaching, resource-providing, monitoring and evaluating functions for students to achieve closed and recyclable promotion. To be more specific, this platform has five processes in total (Refer to Figure 1 for details), namely, independent learning, resource management, teaching management, evaluation feedback and grade certification, which form a closed circulating learning system. This platform is also conducive for students to realize self-recognition and promotion in term of the five skills including, listening, speaking, reading, writing and translation of English in higher vocational colleges. Firstly, independent learning is mainly composed by the selection of courses and self-learning, and its contents include teaching videos of English skills, English knowledge points, application skills, etc. Secondly, resource management is mainly about course management, and provides resources for listening, speaking and grammar of high-quality English courses in higher vocational colleges based on various difficulty gradients. Thirdly, teaching management plays a role in the following two aspects mainly: record and monitor all operation activities after students of higher vocational colleges log in the platform to promote their learning initiative; on the other hand, guide the students to receive test and make selection at the next step to reinforce the utilization of the resources and functions of the platform. Fourthly, evaluation feedback is mainly intended to stimulate and reinforce the self-learning activity of students, and earnestly feedback the learning outcome of students through classroom quiz, process feedback, escalation examination, etc. Fifthly, grade certification is aimed at expanding English learning, and is also the practical foundation for students to understand their level of English skill. The platform provides single skill and comprehensive skill certification function, tests the main knowledge points in PRETCO of Grade A and B using past papers and exercise papers of English standardization examinations of various levels, and generates English skill certification reports.

![Figure 1. O2O English teaching platform for higher vocational colleges](image)

3.2 O2O English teaching processes for higher vocational colleges

The design of O2O English teaching process for higher vocational colleges is mainly divided into three modules, including preview and exchange before class, face-to-face teaching and internalization in class and evaluation and expansion after class (Refer to Figure 2). Firstly, the preview and exchange before class, during which, teachers analyze the teaching objectives of the unit first of all, then break down knowledge points, produce guiding videos for the course at proper difficulty, design homework and quiz of reasonable amount, and stimulate students’ interest in learning and thinking deeply. Students can watch the guiding videos for the course through O2O teaching platform to comprehend and learning the knowledge points, and complete homework and quiz arranged
by teachers. During this process, students can perform self-directed learning anytime and anywhere, and they can also get to know the key and difficult points of the course, so as to identify the ones which they do not get or are not clear about in advance. Meanwhile, students can perform online or offline communication and discussion to further enhance their learning initiative. Secondly, the face-to-face teaching and internalization in class. This teaching process mainly adopts the face-to-face way in class for teachers to further supplement and complete the teaching contents of the course based on teaching objectives, key and difficult points. Moreover, teachers can divide students into several learning groups; design specific challenging and exploratory tasks to guide students to complete these tasks through mutual negotiation and communication; explain key points in a concentrated manner based on the students’ learning situations on the platform; and help students to realize individual internalization of knowledge through discussion and exchange according to the completion status of tasks. Finally, teachers work out classroom evaluation results for students, and combine the evaluation results generated from the independent O2O English learning platform for higher vocational colleges to formulate the summarized evaluation of students. During the process, passive learning is transformed into active learning, students’ learning interest is also stimulated, and their independent exploration and collaborative learning ability is promoted as well; thus, realizing the internalization of English knowledge. Thirdly, the evaluation and expansion after class. Students can basically grasp the knowledge points of the unit through the learning and communication during the previous two processes; they can also receive skill test and escalation examination in the O2O English platform in higher vocational colleges, so as to obtain evaluation feedback results. While, teachers can set proper expansion learning contents based on the mastering level of students to solidify and expand their English knowledge.

Figure 2. O2O English teaching process for higher vocational colleges

4. EXPERIMENTAL DESIGN OF O2O ENGLISH TEACHING FOR HIGHER VOCATIONAL COLLEGES

4.1 Experiment preparation

The experiment is designated to verify the feasibility of O2O English teaching mode for higher vocational colleges under multi-media environment through comparing and analyzing both teaching modes. The experimental objects are two classes of the same grade majoring in preschool education from a certain higher vocational college, which are defined as experiment group and reference group randomly. One of the classes (49 students) is the experiment group, that adopts the O2O English teaching mode for higher vocational colleges; and the other class (46 students) is the reference group, that adopts the conventional 3P teaching mode, e.g., presentation→practice→production. Both classes have the totally same textbook, teacher and teaching hour. The experiment lasts for four months, with six credits for one semester, and seven classes in each week at average. It uses the textbook of New Horizon English Course, the test paper of standardized English test papers (test papers of CET-4, CET-6 and PRETCO of Grade A and B), and the analysis software of SPSS22.0.

Prior to the commencement of experiment, placement test of English is arranged for experimental objects from the two classes majoring in preschool education with the test paper of PRETCO of Grade B. Set the mean score
to be \( x \), calculate the standard deviation \( s^2 \) and variance \( s \) of the scores of the both experimental objects with the following formula, so as to verify the stability of data and of divergence of mean scores:

\[
    s^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}
\]

\[
    s = \sqrt{s^2}
\]

Then, employ the independent sample \( t \) to perform inspection, statistics and analysis of the displacement scores of the experiment group and reference group; and resulting \( p=0.230>0.05 \), indicating that the English foundation of students from the two groups does not have remarkable difference. Refer to Table 1 and Table 2 for details.

**Table 1** Comparison of Placement Test Scores

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of students</th>
<th>Mean score</th>
<th>Standard difference</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment group (Class No. 1)</td>
<td>49</td>
<td>77.0391</td>
<td>8.11010</td>
<td>1.03844</td>
</tr>
<tr>
<td>Reference group (Class No. 2)</td>
<td>46</td>
<td>76.3324</td>
<td>9.46002</td>
<td>1.12007</td>
</tr>
</tbody>
</table>

**Table 2** Inspection Results with Independent Sample

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>Sig.</th>
<th>( t )</th>
<th>df</th>
<th>Sig. (Both sides)</th>
<th>Difference of mean score</th>
<th>Standard error</th>
<th>Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variance</td>
<td>3.058</td>
<td>.079</td>
<td>1.273</td>
<td>102</td>
<td>.213</td>
<td>2.16431</td>
<td>1.71003</td>
<td>5.56714 -1.11087</td>
</tr>
<tr>
<td>Unequal variance</td>
<td>1.270</td>
<td>.9834</td>
<td>.220</td>
<td>98.34</td>
<td>.220</td>
<td>2.16431</td>
<td>1.72032</td>
<td>5.58313 -1.29841</td>
</tr>
</tbody>
</table>

**4.2 Experiment processes**

In the experiment, the experiment group reinforces the guidance of independent learning by students themselves through O2O teaching platform; while the reference group adopts the conventional 3P teaching mode to give priority to classroom explanation. Take Chapter IV Science and Technology in the *New Horizon English Course* for example:

**Table 3** Living sample of classroom teaching

<table>
<thead>
<tr>
<th>Teaching objectives</th>
<th>Experiment group</th>
<th>Reference group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching mode</td>
<td>O2O teaching mode</td>
<td>3P teaching mode</td>
</tr>
<tr>
<td>Course evaluation</td>
<td>Learning tasks + escalation examination</td>
<td>Unit quiz + mid-term examination + final examination</td>
</tr>
<tr>
<td>Teaching hour allocation</td>
<td>Self-learning on the platform for 4 class hours and face-to-face teaching for 3 class hours</td>
<td>Face-to-face teaching for 7 class hours</td>
</tr>
<tr>
<td>Teaching process</td>
<td>1. Preview and exchange before class (2 class hours) 2. Face-to-face teaching and internalization in class (3 class hours) 3. Evaluation and expansion after class (2 class hours)</td>
<td>1. Introduction and expiation (2 class hours) 2. Grammar teaching and exercise (3 class hours) 3. Listening and speaking exercise (2 class hours)</td>
</tr>
</tbody>
</table>
4.3 Experimental results and analysis

The PRETCO of Grade A is selected to check the teaching outcomes of the experiment group and reference group upon completion of the experiment after four months. The whole-process supervision with camera is provided and teachers of the English Teaching and Research Office go over all test papers, so as to ensure the credibility and validity of the examination. Independent sample t is also used for inspection. Please refer to Table 4 to Table 6 for details. In Table 5 on score comparison, t=3.925, degree of freedom df=102 and p value in two-side inspection (Sig.) =0.001<0.005; which indicate that there is an obvious difference in the scores of the experiment group (Class No. 1) and reference group (Class No. 2). In Table 6 on paired sample inspection, the t=8.694, degree of freedom df =52 and p value in two-side inspection (Sig.)=0.003<0.005 in the inspection results of displacement test scores and final examination score, which show that there is an prominent difference in the scores of the experiment group (Class No. 1) before and after the experiment; the t=1.359, degree of freedom df=51 and p value in two-side inspection (Sig.)=0.108>0.005 in the inspection results of displacement test score and final examination score of the reference group, which indicate that the score of the reference group (Class No. 2) is higher than before, but there is no remarkable difference compared with that of the displacement test score. The foregoing results show that the displacement test scores and experiment scores of the experiment group (Class No. 1) and reference group (Class No. 2) are in normal distribution, and the experiment score of the reference group is obviously lower than the experiment group, exhibiting that the O2O English teaching mode for higher vocational colleges is surely beneficial to enhance teaching outcomes. The experimental results prove that the learning outcomes of students from higher vocational colleges reach the excellent level through implementing the O2O English teaching mode; thus, this mode is good in terms of feasibility and effectiveness.

Table 4 Comparison of Examination Scores

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of students</th>
<th>Mean score</th>
<th>Standard difference</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment group (No.1)</td>
<td>49</td>
<td>83.0422</td>
<td>6.23240</td>
<td>.86374</td>
</tr>
<tr>
<td>Reference group (No.2)</td>
<td>46</td>
<td>78.5184</td>
<td>7.82491</td>
<td>1.02378</td>
</tr>
</tbody>
</table>

Table 5 Inspection Results with Independent Sample

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>F</th>
<th>Sig.</th>
<th>t</th>
<th>df</th>
<th>Diff. of Mean Score</th>
<th>Sig. (Both sides)</th>
<th>Standard Error</th>
<th>Confidence interval Upper limit</th>
<th>Confidence interval Lower limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variance</td>
<td>3.124</td>
<td>.079</td>
<td>3.925</td>
<td>102</td>
<td>.001</td>
<td>5.37867</td>
<td>1.36224</td>
<td>8.21541</td>
<td>2.72094</td>
</tr>
<tr>
<td>Unequal variance</td>
<td>3.921</td>
<td>.967</td>
<td>96.72</td>
<td>.001</td>
<td>5.37867</td>
<td>1.34071</td>
<td>2.70647</td>
<td>8.22349</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 Inspection with Paired Sample

<table>
<thead>
<tr>
<th>Comparison of component difference</th>
<th>Mean score</th>
<th>Standard difference</th>
<th>Standard error of mean score</th>
<th>Confidence interval Upper limit</th>
<th>Confidence interval Lower limit</th>
<th>t</th>
<th>df</th>
<th>Sig. (Both sides)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment group</td>
<td>Displacement test</td>
<td>-6.02234</td>
<td>4.56378</td>
<td>4.83240</td>
<td>-7.598701</td>
<td>-</td>
<td>52</td>
<td>.003</td>
</tr>
<tr>
<td>Reference group</td>
<td>Displacement test</td>
<td>2.70241</td>
<td>11.59741</td>
<td>1.57943</td>
<td>1.359</td>
<td>-</td>
<td>51</td>
<td>.108</td>
</tr>
</tbody>
</table>

5. CONCLUSIONS

The English teaching reform relying on multi-media environment in higher vocational colleges can provide new ideas and directions for the development of teaching modes. The popularization of information technology does not only boost the diversification reform of English teaching mode, but also optimize the teaching processes and teaching mode as well. The establishment of network-based English learning platform can supplement and complete the conventional teaching mode, fully combine on-line independent learning and off-line classroom
teaching, and improve the learning interest and initiative of students. Of course, higher vocational colleges should not blindly follow the reform trend, but should perform scientific English teaching reform based on actual situations about teaching, colleges and the quality of source of students, so as to facilitate the conversion from knowledge-oriented teaching to skill-oriented teaching, and to enhance comprehensive English language ability.

REFERENCES


