Investigation and Analysis on Informatization of English Education in Higher Vocational Colleges in Information Age

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Abstract. The rapid development of the information age has promoted the rapid development of the information of higher vocational education. Taking the 13 vocational colleges in Jilin Province as the research object, this paper introduces the present situation of the information of English education, points out their achievements and shortcomings in the construction of information infrastructure, and puts forward the strategies to speed up the information process of the higher vocational English education.

1. Introduction

In February 2019, the General Office of the Ministry of Education issued The Key Points of Educational Informatization and Network Security in 2019, which promoted the construction of vocational education resources and guided vocational colleges to form the application mode of educational informatization. In recent years, as a compulsory course in higher vocational colleges, English information education has become an important part of experts’ research. For example, Man Rong (2016) discussed the integration of information technology and curriculum in higher vocational English teaching model, and put forward the construction of school-enterprise cooperative English service platform [1]. Gu Yun (2017) analyzes the problems existing in the information literacy of English teachers in higher vocational colleges [2]. Based on information technology, Wang Yang (2018) and other experts designed a mixed learning model of English flip classroom in higher vocational education [3]. Xu Youming (2019) analyzes the problems existing in English teaching in higher vocational colleges under the background of information technology and the significance of the mixed teaching model [4]. However, most of the research objects are only in one higher vocational college. In view of this, this paper investigates the present situation of English informatization education in 13 higher vocational colleges in Jilin Province, and puts forward some countermeasures.

2. Research design

2.1. Research objectives

To understand the infrastructure, faculty and their information literacy of English education in higher vocational colleges and universities in the era of information-based age.

2.2. Research subjects

The survey subjects include 13 higher vocational colleges in Jilin Province. A total of 140 questionnaires were sent out and 114 valid questionnaires were sent back.
2.3. Research process
An electronic questionnaire was sent and recovered to 140 English teachers from 13 higher vocational colleges in Jilin Province by means of email or WeChat.

3. Analysis methods

3.1. Methods selection
In multivariate regression analysis, the correlation coefficient between certain two variables was calculated under the condition of eliminating the influence of other variables. In multivariate correlation analysis, simple correlation coefficients may not truly reflect the correlation between variables X and Y, because the relationship between variables is very complex, they may be affected by more than one variable. The partial correlation coefficient is a better choice in this case.

3.2. Methods introduction
Suppose we need to calculate the correlation between X and Y, Z represents all the other variables, and the partial phase relation number of X and Y can be regarded as the simple correlation coefficient between the residual Rx obtained by X and Z linear regression and the residual Ry obtained by Y and Z linear regression, that is, the pearson correlation coefficient, and the formula is as follows:

\[ r_{12(3)} = \frac{r_{12} - r_{13}r_{23}}{\sqrt{1 - r_{13}^2} \sqrt{1 - r_{23}^2}} \]

In a system composed of multiple elements, when studying the influence or correlation degree of one element on another, the influence of other elements is regarded as a constant (unchanged), that is, the close degree of the relationship between the two elements is studied separately without considering the influence of other elements, and the numerical results are partial correlation numbers.

3.3. Methods test
The zero hypothesis of partial correlation coefficient is that the partial correlation coefficient between the two variables in the population is 0.

\[ H_0: r = 0 \]

\[ H_1: r \neq 0 \]

The t test method is used to test the number of partial phase relations, and the formula is as follows:

\[ r = \frac{\sqrt{n - k - 2} \cdot r}{\sqrt{1 - r^2}} \]

Where r is a correlation coefficient, n is the number of sample observations, k is the number of controllable variables. When \( t > t_\alpha \) or \( P < \alpha \), the original hypothesis is rejected.

4. Research results and analysis

4.1. Information infrastructure

| Table 1. Information infrastructure |
|-------------------------------------|
| **Subject**                        | **Choices**                  | **Number** | **Proportion (%)** |
| The facilities of School           | Campus network               | 105        | 92.11              |
|                                      | Information teaching software | 42         | 36.84              |
|                                      | Facilities and venues required for shooting micro-lectures | 21 | 18.42 |
|                                      | Guidance of information technology personnel | 39 | 34.21 |
| Classroom types                    | Traditional classroom        | 39         | 34.21              |
|                                      | Multimedia classroom         | 87         | 76.32              |
|                                      | Language lab                 | 21         | 18.42              |
|                                      | Smart classroom              | 0          | 0.00               |
| There is a management mechanism or system of network teaching evaluation | No | 78 | 68.42 |
|                                      | Yes                         | 36         | 37.58              |
| There is a network marking system   | No                          | 90         | 78.95              |
|                                      | Yes                         | 24         | 21.05              |
4.2. Faculty and their information literacy of English education

Table 2. Faculty

| Subject                  | Choices                  | number | Proportion (%) |
|--------------------------|--------------------------|--------|----------------|
| gender                   | female                   | 93     | 81.58          |
|                          | male                     | 21     | 18.42          |
| Teaching experience      | 1-5                      | 24     | 21.05          |
|                          | 6-10                     | 33     | 28.95          |
|                          | 11-15                    | 21     | 18.42          |
|                          | 16+                      | 36     | 31.58          |
| Educational background   | Junior college student   | 0      | 0.00           |
|                          | Undergraduate student    | 51     | 44.74          |
|                          | master                   | 63     | 55.26          |
|                          | doctor                   | 0      | 0.00           |
| Academic title           | Teaching assistant       | 15     | 13.16          |
|                          | lecturer                 | 69     | 60.53          |
|                          | Associate professor      | 24     | 21.05          |
|                          | professor                | 6      | 5.26           |

Table 3. Information literacy of English education

| Subject                                                                 | Choices                               | number | Proportion (%) |
|-------------------------------------------------------------------------|---------------------------------------|--------|----------------|
| Outline of National Medium-and Long-term Education Reform and Development Plan (2010~2020) | Do not understand                     | 51     | 44.74          |
|                                                                         | Understand                            | 63     | 55.26          |
|                                                                         | Fully understand                      | 0      | 0.00           |
| Ten-year Development Plan of Education Informatization (2011-2020)      | Do not understand                     | 69     | 60.53          |
|                                                                         | Understand                            | 42     | 36.84          |
|                                                                         | Fully understand                      | 3      | 2.63           |
| ___ attend a conference or training on informationization of English education | Never                                | 33     | 28.95          |
|                                                                         | Seldom                                | 51     | 44.74          |
|                                                                         | Sometimes                             | 30     | 26.32          |
|                                                                         | Always                                | 0      | 0.00           |
| Organizer of the meetings or training                                  | No organizer                          | 33     | 28.95          |
|                                                                         | School                                | 42     | 36.84          |
|                                                                         | Department                            | 9      | 7.89           |
|                                                                         | Jilin Province                        | 24     | 21.05          |
|                                                                         | Nation                                | 6      | 5.26           |
| Have you ever participated in a research on the informatization of English education? | No                                    | 42     | 36.84          |
|                                                                         | Yes                                   | 72     | 63.16          |
| Sponsor of the research                                                | No sponsor                            | 42     | 36.84          |
|                                                                         | School                                | 51     | 44.74          |
|                                                                         | Department                            | 6      | 5.26           |
|                                                                         | Jilin Province                        | 15     | 13.16          |
|                                                                         | Nation                                | 0      | 0.00           |
| Have you ever instructed students to participate in "Internet" innovation and entrepreneurship projects or competitions related to English? | No                                    | 57     | 50.00          |
|                                                                         | Yes                                   | 57     | 50.00          |
| Sponsor of the projects or competition                                 | No sponsor                            | 57     | 50.00          |
|                                                                         | School                                | 42     | 36.84          |
|                                                                         | Department                            | 6      | 5.26           |
|                                                                         | Jilin Province                        | 6      | 5.26           |
|                                                                         | Nation                                | 3      | 2.63           |

In view of the above-mentioned differences, the author makes a correlation analysis on the faculty and their information literacy of English education by using the SPSS19.0 software, and the results are shown in Table 4-7. The significance level is 0.1. If the value of Sig. is less than or equal to 0.1, it is proved that the two items are related. Positive number means positive relationship and negative relationship.
Table 4. A correlation Analysis on teachers’ teaching age and their Informatization Literacy

| Subject                                                                 | Sig. | correlation |
|-------------------------------------------------------------------------|------|-------------|
| Outline of National Medium-and Long-term Education Reform and Development Plan (2010–2020) | .000 | .423        |
| Ten-year Development Plan of Education Informatization (2011-2020)      | .158 | -.137       |
| A conference or training on informationization of English education     | .667 | .042        |
| Organizer of the meetings or training                                  | .005 | .271        |
| A research on the informatization of English education                  | .736 | -.033       |
| Sponsor of the research                                                 | .140 | .144        |
| Instruction for students to participate in "Internet" innovation and entrepreneurship projects or competitions related to English | .773 | -.028       |
| Sponsor of the projects or competition                                 | .064 | -.180       |

Table 5. A correlation Analysis on teachers’ genders and their Informatization Literacy

| Subject                                                                 | Sig. | correlation |
|-------------------------------------------------------------------------|------|-------------|
| Outline of National Medium-and Long-term Education Reform and Development Plan (2010–2020) | .000 | .362        |
| Ten-year Development Plan of Education Informatization (2011-2020)      | .034 | -.205       |
| A conference or training on informationization of English education     | .134 | .146        |
| Organizer of the meetings or training                                  | .024 | -.218       |
| A research on the informatization of English education                  | .676 | -.041       |
| Sponsor of the research                                                 | .037 | .020        |
| Instruction for students to participate in "Internet" innovation and entrepreneurship projects or competitions related to English | .396 | -.083       |
| Sponsor of the projects or competition                                 | .181 | .130        |

Table 6. A correlation Analysis on teachers’ educational background and their Informatization Literacy

| Subject                                                                 | Sig. | correlation |
|-------------------------------------------------------------------------|------|-------------|
| Outline of National Medium-and Long-term Education Reform and Development Plan (2010–2020) | .000 | -.445       |
| Ten-year Development Plan of Education Informatization (2011-2020)      | .018 | .229        |
| A conference or training on informationization of English education     | .146 | .141        |
| Organizer of the meetings or training                                  | .188 | .128        |
| A research on the informatization of English education                  | .533 | -.061       |
| Sponsor of the research                                                 | .037 | -.202       |
| Instruction for students to participate in "Internet" innovation and entrepreneurship projects or competitions related to English | .305 | .100        |
| Sponsor of the projects or competition                                 | .636 | .046        |

Table 7. A correlation Analysis on teachers’ academic titles and their Informatization Literacy

| Subject                                                                 | Sig. | correlation |
|-------------------------------------------------------------------------|------|-------------|
| Outline of National Medium-and Long-term Education Reform and Development Plan (2010–2020) | .000 | .361        |
| Ten-year Development Plan of Education Informatization (2011-2020)      | .995 | .000        |
| A conference or training on informationization of English education     | .004 | .275        |
| Organizer of the meetings or training                                  | .075 | .173        |
| A research on the informatization of English education                  | .017 | -.229       |
| Sponsor of the research                                                 | .580 | -.054       |
| Instruction for students to participate in "Internet" innovation and entrepreneurship projects or competitions related to English | .004 | .276        |
| Sponsor of the projects or competition                                 | .059 | -.183       |

It can be seen from Table 4 that the older the teaching age, the more understanding of the Outline and the higher the level of the relevant meeting. And the lower the teaching age, the higher the level of the innovation competition of teachers’ instruction on students. Therefore, there is a weak relationship
between the teaching age and the information literacy. As can be seen from Table 5, male teachers know more about the Outline and have participated in higher levels of projects, while female teachers know more about the Planning and have attended meetings of higher levels. Therefore, gender is related to information literacy. As can be seen from Table 6, the lower the academic background, the more understanding of the Outline and the higher the level of the projects. The higher the teachers’ academic background, the more understanding of the Planning. Therefore, there is a weak relationship between academic qualifications and information literacy. According to Table 7, the higher the professional title, the more understanding of the Outline and the more meetings they have attended and the more innovation competitions they guided students to participate in. The lower the professional title, the more projects they have taken part in, and the higher the level of innovation competition they guided students to participate in. Therefore, the professional title and information literacy are closely related.

5. Countermeasures
In view of the investigation situation, this paper puts forward the following strategies in order to speed up the process of higher vocational information education.

5.1. For schools
Colleges and universities should further increase the investment in information infrastructure equipment. With the introduction of new hardwares, softwares and technical personnel of information teaching, they should also maintain and update the information equipment to ensure the effect of teaching. What’s more, an open cooperative environment could be created to vigorously promote the cooperation between schools and enterprises, which would promote the construction of information technology in higher vocational education.

5.2. For teachers
Teachers’ information literacy should be promoted to higher levels. The current situation of English teachers could be gradually improved and policy measures should be planned to support English teachers to promote senior titles. And the information policy of education should be actively publicized, and the training and further study of modern information technology for teachers should be arranged. Teachers should also actively participate in relevant meetings or training, write papers, apply for projects, and guide students to participate in the relevant competitions.

6. Conclusion
Public English course is an important part of higher vocational education. English teachers should make full use of Internet information tools to innovate the English teaching mode of higher vocational education, give full play to the advantages of information technology in English teaching, and strive to train large country craftsmen in the information age in order to meet the increasing demand for international talents in higher vocational education at home and abroad.

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