



Preference of Furthering Studies in Vocational Education System, An Empirical Analysis of Questionnaires

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Abstract. It is a phenomenon that students in the vocational education system further their studies for higher level of degrees in the developed countries. With a purpose to understand the preference together its influencing factors of whether the students further their studies for the bachelor degrees in the universities in China, this paper carried a questionnaire with an empirical analysis by decision tree method targeting the students being enrolled in the higher vocational colleges, most of which are located in the Guangdong-Hong Kong-Macao Greater Bay Area. The questionnaire includes questions of personal and family characteristics, preference/reasons/concerns of pursuing bachelor degrees in universities, daily courses and capability cultivation, gains in the internship. The results in the questionnaire concludes that the students feel difficult in learning courses related to mathematics, English languages, and technical courses in theory. This research also finds students' incompetency in these three types of courses, which are also the ones they would like to improve in the universities after they are approved for bachelor degrees. It is recommended that the higher vocational college should strengthen these three categories of courses, especially to those students who plan to pursue their bachelor degrees in the universities after graduation.

Keywords: Pursue bachelor degree after graduation in the higher vocational college · Preference questionnaire · Higher vocational college · Vocational education

1 Introduction

In August 2019, General Secretary Xi Jinping stressed that vigorously developing the real economy is the guarantee to support the strong development of China's economy. A large number of skilled talents is fundamental to strengthen the real economy. Skilled talents are needed to energetically carry forward the spirit of craftsman. Therefore, the development of vocational education has broad prospects [1]. Party and state leaders have stressed the importance of developing vocational education on different occasions. General Secretary Xi Jinping requires that "Party committees and governments at all levels should give more prominence to the acceleration of the development of modern

vocational education, better support and help the development of vocational education”, so as to constantly optimize and upgrade the industrial structure to develop toward modernization, and constantly change the way of economic development. Premier Li Keqiang said that “vocational education has great potential and it should also have great achievements”.

The emergence of vocational education is formed when the industry has developed to a certain stage. With the accelerating pace of modern industrialization, vocational education is increasingly needed to cultivate all kinds of talents required by the industry [2]. Therefore, industrial development is the fundamental reason for the birth and progress of vocational education, and the characteristics of industrial structure determine the different structure of talent demand [2]. With the continuous adjustment and upgrading of China’s industrial structure, vocational education can no longer be developed as a single labor skill training in the past, but should turn to the cultivation of comprehensive skills and quality of talents [3].

Since the reform and opening up in 1978, China has gradually developed into a “big country in vocational education”, and has achieved shocking results in vocational education, but there is still a certain gap between China and the developed country in vocational education [4]. In the process of transforming from a “big country of vocational education” to a “powerful country of vocational education”, we also need overcome the following main problems [3]. 1) The academic education conducted by vocational schools is subordinate to the Ministry of Education, while various post-work training and re-education are subordinate to the human resources and social security departments, which are basically separated. 2) There is still gap for learners to pursue self-improvement and diversified learning, which cannot meet their lifelong learning requirements. Vocational education and general education are carried on in two parallel tracks, and there is no effective way to link up and transform between the two education systems.

At present, there are different frameworks for modern vocational education system, such as the framework given in the planning documents issued by the Ministry of Education [5], the framework proposed by Wang Yangnan after his academic research review [6], and the ideal framework proposed by Deng Ziyun [7]. Although the structure of these frameworks is different, the goal is to establish a “vertical flow, two-way communication” framework, vocational education and general education can achieve mutual free enrollment and normal flow. Even though the academic scholars have not reached an agreement on whether to set applied technology undergraduate course as the undergraduate stage of vocational education. Some scholars believe that undergraduate vocational education should be conducted by higher vocational colleges, and the others believe that undergraduate vocational education should be achieved by ordinary undergraduate colleges holding applied technology undergraduate course [7]. In either case, the prerequisite is to smoothly connect vocational educations, education of practical personnel and general education, including different levels in each of these three types of education. The rules of its penetration should be made in a clear way. And the curriculum system and the ability qualification certification are the keys for these two different education systems to be able to exchange and transform. Especially in the context of China’s accelerating development of vocational education, improving the connection

between higher vocational education and undergraduate education is an important link in the construction of lifelong vocational education system; it is also the key to the effective connection between the curriculum systems of two education systems [8]. By formulating reasonable and effective curriculum cohesion, forced conversion between different education types and levels can be avoided, so as to achieve smooth transition and effective connection between different levels and different types of education [9]. The curricular connection system of all levels and types of education is the essential content of the construction of modern vocational education system [10].

When designing of the connection to vocational education system, first of all, it is necessary to analyze the willingness of students to upgrade and the factors affecting their willingness, in order to optimize and to design the job-based linkage system according to the influencing factors. The goal is to realize the smooth linkage and transition of students' ability training. Due to this goal, this paper designed a questionnaire regarding vocational college students' preference to upgrade to investigating students' personal and family characteristics, their preference to upgrade, and the reasons for planning and not planning to upgrade, so as to guide the design and optimization of the follow-up vocational college transition system.

2 Questionnaire Design for Analysis

In this study, the needs of students in vocational education system for furthering their studies are investigated. The needs are analyzed by clustering to obtain the demand characteristics. The demand characteristics are used as the data support to construct the practical ability of connection between two education systems especially their theoretical knowledge connection. Based on the basic demographic and economic statistical information of students (including age, school, place of origin, family population and income, parents' occupation, etc.), this survey focuses on the willingness and reasons of students to further their studies. Meanwhile, conducting a synchronous survey on the courses, internships and other experiences that may affect students' willingness to further their studies.

The survey of this project mainly focuses on the higher vocational schools in the Guangdong-Hong Kong-Macao Greater Bay Area, and also covers other parts of the country, locating in major economic provinces in China. The survey has good spatial coverage and representativeness. This survey is conducted through questionnaires on a platform named as Wenjuanxing (<https://www.wjx.cn/>), which provides functions equivalent to Amazon Mechanical Turk. During the three months of the survey, a total of 350 samples were collected. After removing the invalid samples, a total of 330 valid samples were achieved. This paper analyzes these 330 valid samples. Among the 330 samples, the largest number of 47 samples come from Guangdong Province, followed by Henan Province (31 samples), Zhejiang Province (28 samples), Hunan Province (28 samples), Jiangsu Province (26 samples) and Hubei Province (26 samples). The vast majority of the samples in Guangdong Province come from Shenzhen Vocational and technical college, which is a top-level college on the list of Higher Vocational Colleges in China. These samples can reflect the more cutting-edge representative ideas of the student group.

3 Analysis of the Results of Demographic and Economic Statistics

3.1 Personal Characteristics of Students

Among the students who participated in the survey, most of them are male students, reaching 194 people and accounting for 59% of the total samples, while the remaining 41% are female students, which are 136. Regarding the majors of these students, 60% are engineering related majors, accounting for the absolute majority. It is followed by economics and liberal arts, accounting for 11% respectively, and medical and management, accounting for 7% and 6% respectively. Regarding the students' grade, it is found that the students who participated in the survey are mainly in grade one and grade two, accounting for 39% and 41% of the total respectively.

As far as the students' academic performance and learning ability is concerned, the surveyed students showed their performance in the latest past semester as follows. Vast majority (91%) of students did not fail the exam in the last semester; 5% of students failed one course; 2% of students failed two courses, and 2% of students failed three or more courses.

3.2 Family Characteristics of Students

According to the statistics of the information related to the students' families, it is found that the parents of the students involved in the survey belong to common occupations. Among the common ones, production personnel and sales personnel occupy the most two. The educational background statistics of students' parents reflect that students' parents mainly reach one of following three educational levels, primary school, middle school and high school.

As for the sources of students' daily living expenses, the results show that the vast majority (90%) of students' daily living expenses come from their parents, 8% of students earn their daily living expenses mainly by working on their own, and a small number of students also need subsidies from their parents in addition to their own work. The average monthly total income of 50% of students' families is 3001–9000 yuan, followed by 16% and 19% of families below 3000 yuan and 9001 to 15000 yuan respectively. If the median of the range of average monthly income and the number of family members are taken to calculate the per capita monthly income of families, it is found that the per capita monthly income of families between 1001 to 3000 yuan accounts for the majority, reaching 60%, followed by 3001 to 6000 yuan (13%) and 200 to 500 yuan (12%).

4 Analysis of the Intention to Upgrade and Related Influencing Factors

4.1 Preference Analysis of Pursuing Bachelor Degree in Universities

It is found that 85% of the valid samples (281 students) thought it is necessary to further their study at a higher level, while only 15% thought it is not necessary. 72% of the students plan to further their study, while only 28% do not. A cross-analysis of the two results find that most of the students (45 out of 49) who thought it is not necessary

to further their studies did not plan to do it, and most of the students (46 out of 281) who thought it is necessary to do it also planned to do it. In addition, there is a certain proportion of students (46 out of 281, that is 16%) who do not plan to do it for various reasons, although they think it is necessary to do it.

4.2 Ranking of Course Difficulty

Weight is assigned to the ranking of the difficulty of courses by students participating in the questionnaire. Weight of the most difficult course a student thought is given as 7, and the weight of second most difficult to the seventh difficult courses is set as 6, 5, 4, 3, 2 and 1 accordingly. It is found that the courses can be ordered in the following sequence according to their difficulty measured by average value and median value: foreign-language classes (average: 5.51, the median: 7), math courses (average: 5.38, the median: 7) theory courses, professional class (average: 4.78, median: 7), etc. This is consistent with the frequency result of choosing difficult courses by the students; the frequency result shows that foreign language courses (93 students), mathematics courses (92 students), and professional theory courses (46 students) are the popular ones regarding the most difficult courses.

4.3 Ranking of Cultivation Ability

Weight is given to the six types of cultivation ability by the students due to their belief of the ability cultivated by their current curriculum system answered by students. Cultivation ability they believe their curriculum system focuses most is set as 5. It is followed by other types of ability less focused, whose weight is set from 4 to 1 correspondingly. It is found that the cultivated ability can be ranked in the following sequence according by average value and median value: the ability of operating capacity (average: 4.48, the median: 5), analysis ability (average: 3.68, the median: 3), programming ability (average: 3.15, median: 2.5), foreign language skills (mean: 2.74, median: 3) and social skills (mean: 2.73, median: 3.5). This is consistent with the frequency result of choosing the ability cultivated in the most focused way.

4.4 Ranking of Internship Gains

Weight is given to the six kinds of internship gains by the students due to their judgement. The weight of the first choice is set as 6, and the weight of the training ability selected as the second choice to the sixth choice is set as 5, 4, 3, 2 and 1 respectively. It is found that the gains obtained during internship can be ranked in the following order due to the average value and median value: “to deepen the understanding of knowledge, exercise the operation ability” (average: 5.36, the median: 3), “found their daily learning in the campus inadequate” (average: 4.47, median: 5), “understand the work requirements and working environment of the enterprise” (mean: 4.20, median: 5), etc. Internship is not the first three choices that most students choose. The first three kinds of internship are consistent with the frequency results of selecting from one to six kinds of internship gains.

4.5 Ranking of Deficiencies Found in Internship

According to the answers provided by students who participated in the internship, six kinds of insufficient knowledge in the internship are provided to the students to let them evaluate their weights. The knowledge they believed the most insufficient (first option) is set as 6 as the weight, and the weight of ability chosen as the second to the sixth option is set as 5, 4, 3, 2, and 1 correspondingly. It is found that the insufficient knowledge can be ranked in the following order due to their average value and median value: mathematics knowledge (average: 6, median: 6), foreign language knowledge (average: 5.58, the median: 5) professional theoretical knowledge (mean: 4.69, median: 5). The deficiency of knowledge found in the above is consistent with the frequency results of selecting from one to six kinds of insufficient knowledge.

In addition, this finding agree with the findings regarding course ranking by difficulty. This means that students in higher vocational college have difficulties in learning mathematics, foreign language and professional theory. At the same time, in the process of internship, it also reflects that students are weak in the fields of these three kinds of knowledge.

4.6 Ranking of Reasons for Furthering a Bachelor Degree

According to the reasons provided by the students who would further their study for a bachelor degree, 10 reasons are provided to the students to be evaluated. Weight is given as 10 when a student chose a reason as the most appropriate one. Weight of the reasons is set as 9, 8, 7, 6, 5, 4, 3, 2, 1, due to the appropriateness a student's evaluation. It is found that the reasons can be ranked in the following order due to their average value and mean value: "there are less opportunities for college students" (average: 9.45, median: 10), "The position is only open to those with a bachelor degree" (average: 8.71, median: 9), "Little chance for promotion after graduating from the college" (average: 8.47, median: 8). This result is consistent with the frequency results of selecting various reasons for furthering study. The three reasons stimulating college students for a bachelor degree are less opportunities, minimum requirement for bachelor degree from positions and little chance for promotion in the career in the case of students without bachelor degree. As these students from college believe that bachelor degree can make them have more opportunities, satisfy the requirement from positions and help them get be promoted in an easier way.

4.7 Ranking of Reasons for Not Furthering a Bachelor Degree

For students who do not plan to further a bachelor degree, nine reasons were provided to them to choose. Among the nine reasons, the most appropriate reason they believe is set 9 as the weight. And the weight of the reason as the second to eighth option is set as 8, 7, 6, 5, 4, 3, 2, 1 as the weight correspondingly. It is found that reasons of not furthering a bachelor degree can be ranked in the following order due to their average value and median value: "there are many job opportunities after college graduation" (average: 8.43, median: 9), "It is too difficult to pass the exam for furthering a bachelor degree, I am afraid THAT I will not succeed" (mean: 7.96, median: 8), "The job income

is fair enough after college graduation” (mean: 7.95, median: 8), “The career can be a good future after college graduation” (mean: 7.92, median: 8.5). This result is consistent with the frequency results of ranking of various reasons for not furthering a bachelor degree.

4.8 Ranking of Courses Planned to Be Strengthened After Entering the University

As for the students planning to further a bachelor degree, a course list was provided with the purpose that the students choose the ones they want to strengthen after entering the university. Course chosen as the first choice is set 7 as the weight. Course chosen as the second to seventh option is set 6, 5, 4, 3, 2 and 1 as the weight correspondingly. It is found that the courses students plan to strengthen can be ranked in the following order: foreign-language classes (average: 5.76, the median: 4), Mathematics (Mean: 5.23, median: 4), Professional theory (Mean: 5.08, median: 4). This result is consistent with the frequency result of choosing the course the students plan to strengthen.

Meanwhile, these three top ranked courses are consistent with previous results. These three ones are also the three most difficult ones the students found during the learning process as well as the three ones they found with deficiencies during internship.

5 Conclusions

Based on the information obtained from a questionnaire survey, this study investigates the preference and influencing factors of higher vocational college students to further a bachelor degree. It is found that most of students who think it is necessary to further a bachelor degree plan to do it. The data from the questionnaire also indicate that higher vocational college students learn with difficulty in mathematics, foreign language and professional theory courses. At the same time, the knowledge of these three courses is also the one they feel deficiencies during internship. These three types of courses are also the ones students plan to strengthen after entering the universities for a bachelor degree.

Therefore, the curriculum system of higher vocational college should be improved with a focus on strengthening these three kinds of courses. Additional measures should be done simultaneous to ensure that vocational college students can smoothly enjoy the undergraduate curriculum system after entering the universities, which could also eliminate the concerns of students. In the aspect of ability cultivation, foreign language ability and social ability are those needed to be improved according to the current results of self-evaluation.

Acknowledgments. This paper is supported by the following projects. 1) Research on of Practical Personnel Education Curriculum Systems Connection between Higher Vocational Education and University based on Heterogeneity of Students in Guangdong-Hong Kong-Macao Greater Bay Area under Grant No. 2020WQYB067. 2) Research on Fostering System of Practitioners Majoring in Logistics Management Guided by New Liberal Arts Construction under Grant No. 2021GXJK335. 3) Research on Fostering System of Practitioners Majoring in Logistics Management in the Context of Domestic and International Circulation (SZTU Education Reform Project

20211014). 4) Guangdong Province-Level Project of Teaching Quality Engineering and Teaching Reform for Constructing Transportation Engineering as A Special Major of Undergraduate Students in the University. 5) Ordinary University Engineering Technology Development Center Project of Guangdong Province under Grant No. 2019GCZX006.

Authors' Contributions. Lei Gong's contribution is generating the idea and the whole structure. Qin Luo's contribution is designing and conducting the questionnaire. Regarding Xiongfei Zhang and Cheng Zhu, their contribution is analyzing the results from the questionnaire. Wei Huang's contribution is writing and translating the content.

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