Analysis of the Relationship Between Academic Achievements and Employment Status of Graduates Majoring in Mathematics in Normal Universities of China

Zezhong Yang[1, *], Qi Han[1], Yiliang Zhao[1], Xintong Yang[2]

[1]School of Mathematics and Statistics, Shandong Normal University, Jinan, China
[2]School of Mathematics and Statistics, Northeastern University at Qinhuangdao, Qinhuangdao, China

Abstract

Based on the analysis of the current situation of university curriculum reform, this paper studied the relationship between the curriculum scores and employment status of 126 students of a normal mathematics major in a normal university with the method of correlation analysis and survival analysis. The academic performance and the morality education scores were integrated into nine kinds of grades of professional compulsory courses, professional optional courses, other compulsory courses, general education, mathematics education courses 1 (compulsory), mathematics education courses 2 (optional), English, Physical education and Morality education performance. Then, we analyzed these nine grades with the help of SPSS software. The results showed that except for the scores of English, moral education and sports, the other scores of courses had little effect on employment. The level of moral education and sports performance had a significant impact on employment. Therefore, in order to promote students to get a job as soon as possible, it is suggested to reform the mathematics curricula of normal university comprehensively, enhance the teaching of Morality and Physical education in particular. It is recommended that the university curricula reform and the class hour arrangement should be arranged in a targeted manner to enhance these courses' impact on employment so that students can achieve higher moral performance in order to better adapt to employment.

Keywords

Mathematics Major, Normal Universities, Employment, Survival Analysis

1. Introduction

Establishing a qualified and stable teaching group in sufficient quantities is a fundamental plan to improve the level of basic education. Normal universities are the "working machine" for training teachers, whose basic task is to make students love to be teachers, know how to be teachers and be good teachers [1-2]. However, due to the saturation of teachers' posts, the diversification of teachers' sources, the treatment of teachers, the threshold of entry, and the changes in ideas, the employment situation of normal universities' students is very severe [3]. Therefore, assisting the normal universities' graduates with successful employment has become a top priority [4-6].

2. Literature Review

In order to promote the normal universities' students to get a job, many researchers have started from the university curriculum reform and made many studies. For example, Li Fan suggested that it was necessary to strengthen the

* Corresponding author
E-mail address: zhongzee@163.com (Zezhong Yang)

connection between the teaching of Morality education in university and the teaching of Morality education in high school, as well as other disciplines such as Chinese language, Mathematics, and Physics. Xiao Chi believed that it was necessary to add a curriculum to cultivate the core literacy teaching skills of normal universities' students to meet the new requirements of the core literacy of Chinese students and the core literacy of high school subjects. Ma Liping proposed that the reform of teacher education courses in normal universities should be carried out to enrich students' pre-service teaching theories and improve their practice ability [7-9].

It is undeniable that the above researches provide a good idea. However, it is obviously not comprehensive. For example, there is no research on the relationship between students' curricula grades and their employment status in the current study. Actually, this kind of research is important for that it can not only let teachers and researchers clearly understand the influence factors of the employment but also help the normal universities to arrange the curricula and class schedules according to the priority so as to correctly guide the students to get a job.

3. Method

3.1. Sample

A total of 202 graduates in mathematics and applied mathematics at the School of Mathematics and Statistics of a Normal University in China were selected as the initial sample. After that, the students who went to study postgraduate degree and went abroad were removed, and the remaining 126 students were sampled.

These graduates' information includes: (1) Academic performance, Morality education performance (Namely comprehensive performance), etc.; (2) Employment status.

3.2. Method

Firstly, the aforementioned academic performance and the Morality education scores are integrated into nine kinds of grades of professional compulsory courses, professional optional courses, other compulsory courses, general education, mathematics education courses 1 (compulsory), mathematics education courses 2 (optional), English, Physical education

and Morality education performance. Secondly, we analyzed these nine grades by the method of correlation analysis and survival analysis.

3.3. Data Analysis

With the help of SPSS software, the correlation analysis and survival analysis of the above nine variables were carried out [10-11].

4. Results

4.1. Relevance of the Above Nine Aspects

Through relevance analysis, it could be found that the professional compulsory courses' grades are significantly related to the grades of professional optional courses, other compulsory courses, general education, English and moral education. Professional optional courses are significantly related to other compulsory courses, general education courses and Morality education course. Other compulsory course is significantly related to the courses of general education, mathematics education 2 (optional), English, physical education and Morality education. General education courses are significantly related to the courses of mathematics education 1 (compulsory), mathematics education 2 (optional), English, physical education and Morality education. Morality education is significantly related to the courses of English and physical education.

After merging the above highly relevant courses' grades, we obtained five new variables as follows: grade 1, mathematics education (compulsory), mathematics education (optional), English, moral education & sports. Among them, the grade 1 is a combination of grades of professional compulsory courses, professional optional courses and other compulsory courses. The moral education & sports is a combination of grades of Physical education and Morality education. The merging method is to average the scores of the merged courses.

4.2. The Impact of Academic Achievement on Employment

Using the Cox function to analyze the five variables and the employment situation, the result is as shown in table 1.

Table 1. Regression of five variables.

Variable in the equation	B	SE	Wald	df	Sig.	Exp (B)
grade 1	.053	.061	.775	1	.379	1.055
mathematics education (compulsory)	-.052	.045	1.386	1	.239	.949
mathematics education (optional)	.008	.043	.036	1	.849	1.008
English	-.121	.052	5.357	1	.021	.886
moral education& sports	-.089	.046	3.706	1	.054	.915

It can be seen from the table 1 that the absolute value of the

coefficient B of all variables was less than 1, which indicated

that the above five variables had little effect on the employment status. Only the companion probability of English was less than 0.05, which indicated that the impact of English on employment was significant, unfortunately the impact was negative.

4.3. The Impact of Differences in Grades on Employment

Each of the above five kinds of grades was divided into four levels of the excellent, good, medium and poor, which were represented by 1, 2, 3, and 4 respectively. Then we analyzed the impact of different levels on employment.

4.3.1. The Impact of Different Levels of Grade 1 on Employment

Using the K-M method to calculate the effect of the grade 1 on the employment situation, and the results obtained are as shown in table 2.

Table 2. Log rank test for grade 1.

Overall comparison	chi-square	df	Sig.
Log Rank (Mantel-Cox)	3.583	2	.167

It can be seen from the table 2 that the companion probability was 0.167, which was greater than 0.05, which indicated that the impact of different grades of the grade 1 was insignificant on employment status.

4.3.2. The Impact of Different Levels of Mathematics Education (Compulsory) on Employment

Using the K-M method to calculate the effect of mathematics education (compulsory) scores on employment status, and the results obtained are as shown in table 3.

Table 3. Log rank test for mathematics education (compulsory).

Overall comparison	chi-square	df	Sig.
Log Rank (Mantel-Cox)	4.336	2	.114

It can be seen from table 3 that the companion probability is 0.114, which was greater than 0.05, which indicated that the different grades of mathematics education (compulsory) was insignificant on employment status.

4.3.3. The Impact of Different Levels of Mathematics Education (Optional) on Employment

Using the K-M method to calculate the effect of mathematics education (optional) scores on employment status, and the results obtained are as shown in table 4.

Table 4. Log rank test for mathematics education (optional).

Overall comparison	chi-square	df	Sig.
Log Rank (Mantel-Cox)	.382	3	.944

As it can be seen from table 4, the companion probability was 0.944, which was greater than 0.05. This indicated that the different grades of mathematics education (optional)) was insignificant on employment status.

4.3.4. The Impact of Different Levels of English on Employment

Using the K-M method to calculate the effect of English scores on employment status, and the results obtained are as shown in table 5.

Table 5. Log rank test for English.

Overall comparison	chi-square	df	Sig.
Log Rank (Mantel-Cox)	3.642	2	.162

As can be seen from table 5, the companion probability was 0.162, which was greater than 0.05. This indicated that the different grades of English was insignificant on employment status.

4.3.5. The Impact of Different Levels of Moral Education & Sports on Employment

Using the K-M method to calculate the effect of moral education& sports scores on employment status, and the results obtained are as shown in table 6.

Table 6. Log rank test for moral education & sports.

Overall comparison	chi-square	df	Sig.
Log Rank (Mantel-Cox)	7.286	2	.026

It can be seen from table 6 that the companion probability was 0.026, which was less than 0.05. This indicated that the different grades of the moral education & sports was significant on employment status.

5. Discussion

From the results of the above Cox regression calculation, it can be seen that the above courses grades have little effect on the employment status, but there is a significant regression relationship between the English curriculum and employment. This means that the English courses' grades have a greater impact on the employment in June. However, its impact was negative.

From the results calculated by the above K-M method, it can be seen that among the above five courses, only the different levels of moral education& sports have a significant impact on the employment status, which shows that the moral education & sports' grades play an important role for graduates to get a job. However, since the value of the coefficient B of moral education& sports was -0.089, its impact was also negative.

6. Conclusion

From the above analysis, it is known that except for the scores of English, moral education and sports, the grads of other courses have little effect on the employment situation. It is recommended that the university curricula reform and the class hour arrangement should be arranged in a targeted manner to enhance these courses' impact on employment. Among them, the grades of moral education and sports achievements have a significant negative impact on employment. Therefore, it is necessary to reform these two courses comprehensively in particular.

Acknowledgements

References

[1]   Chen H. W and Chen J. B. (1991). On the Basic Tasks of Teachers Colleges. Journal of Zhenjiang Teachers College (Social Science Edition), (04): 91-94+77.

[2]   Mo L. L. (1995). Cultivation Ability is the Main Task of Normal Colleges. China Music Education, (04): 14-15.

[3]   Wu X. L. (2018). The Status Quo and Countermeasures of Employment of Physics Majors in Local Teachers Colleges. Journal of Hanjiang Teachers College, 38 (03): 128-134.

[4]   Cai H, J. (2014). Analyzing the Employment Concept of College Students under the New Situation. China Foreign Trade, (5): 2-3.

[5]   Yu H. S. (2018). Analysis of the Status Quo of College Students' Initial Employment Time. Journal of Henan Institute of Education (Natural Science Edition), 27 (01): 36-39.

[6]   Zhang L. F. (2016). Analysis of the Difficulties in College Students' Employment from the Perspective of Supply Side. Times Finance, (12): 274-275.

[7]   Li F. (2018). Analysis of the Contents of Moral Education Teachers' Subject Knowledge Education Course and High School Moral Education Teaching in Normal Universities. Study of Ideological and Political Course, (03): 106-109.

[8]   Xiao C, Zhao Y. C, & Ke Z. (2016). Course Policy Based on Core Literacy——A Summary of the 13th Shanghai International Curriculum Forum. Global Education, 45 (01): 113-120.

[9]   Ma L. P and Li B. X. (2016). The Reform and Practice of Teacher Education Curriculum in Higher Normal Colleges——Based on the Exploration of Teacher Education Curriculum Reform in Harbin Normal University. Language Teaching Communication, (07): 11-13.

[10] Deng J. J. (2016). Research on Risk Prediction Ability Evaluation Method of Survival Analysis Model and Its Application. Nanjing: Southeast University.

[11] Li Y. F. (2017). Study on Statistical Inference of General Deviation Data in Survival Analysis. Changchun: Jilin University.