

Study on the Grassroots Employment of College Students Majoring in Biology in Northern China

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Abstract

To guide college students to take root in grassroots education plays an important role in rural revitalization which is a national strategy for China. Based on the analysis of the current situation of employment, employment expectation and the understanding of grassroots employment service for rural revitalization in college students majoring in biology, the study points out four recommendations to improve the level of grassroots employment through literature review and open questionnaires. It is necessary to strengthen the education of grassroots employment concept for rural revitalization, to strengthen the training of employ ability, to strengthen employment guidance and strengthen employment security at the grass-roots level, to improve the preferential policies for grass-roots employment in order to expand the attractiveness of serving rural revitalization. In conclusion, the recommendations promote the grass-roots employment of college students majoring in biology to serve the national strategy of rural revitalization.

Keywords

College Students, Biology, Grassroots Employment, Rural Revitalization

1. Introduction

The problem of employment is a matter of global concern (Lekouka & Mokombi, 2021; Ncube et al., 2023; Nafakh et al., 2022; Kong & Wei, 2023). How to improve current employment status is a major issue facing the whole world. The report to the 20th National Congress of the Communist Party of China points out that China will implement the strategy of giving priority to employment. Employment is the most basic livelihood. In order to promote high-quality and full employment, we will strengthen the policy of giving priority to employment, improve the employment promotion mechanism (Xi, 2024). The employment of college

students is an important part of the Party Central Committee's work to care for people's livelihood. At the same time, college students who support all walks of life in social development are also an important source of social strength. The Central Committee of the Communist Party of China (CPC) has made a major strategic plan to implement rural revitalization which has a profound international and domestic, economic and social background. This is not only a major historical task of building a modern socialist country in an all-round way after completing the building of a moderately prosperous society in all respects, but also an urgent requirement to address the issues concerning agriculture, rural areas and farmers and promote their development under the new circumstances, as well China's proactive response to new international economic and political challenges (Wang, 2022). The Opinions of the Central Committee of the CPC and The State Council (SC) on Learning and Applying the experience of the "Thousand Villages Demonstration and Ten Thousand Villages Renovation" Project to effectively promote the comprehensive revitalization of rural areas point out that to improve the rural public service system, we will improve the supply of public education services and expand the ranks of rural talents. We will implement the plan to support rural revitalizing personnel, increase the training of local rural personnel, guide urban professionals to serve in rural areas in an orderly manner, and comprehensively improve the overall quality of farmers (CPC & SC, 2024). In the process of rural revitalization, the talent support program and public education service are closely related to college students majoring in biology. Farmers need the knowledge of agricultural biology, and rural areas need relevant biotechnology to improve production. Moreover, agriculture is inseparable from the rapid development brought by biological theory and innovation. It is found that the employment mode of biological teacher graduates is mainly middle school biology teacher, but there are more than ten thousand biological teacher graduates in the country every year, so that the demand for biological teacher in middle schools is gradually saturated. At present, some colleges and universities are still expanding the enrollment of biological students, and most students' employment plan is still for teachers, which leads to a more tense employment situation for biological teachers (Zhang, 2020). Therefore, how to better coordinate the employment contradiction of biological graduates and better serve the national strategic development of rural revitalization is an urgent research topic.

2. Methods

In this study, Data were collected from college students majoring in biology in College of Life Science of Hebei Normal University by random sampling method. The survey which had 329 valid questionnaires found that 70.52% of the respondents are normal students who are a class of college students, their major belongs to the direction of education, and their future employment goal is relatively clear to engage in teaching management work in various schools or educational institutions at all levels, and they are future teachers, 29.48% are non-normal students,

the proportion of male and female respondents are 16.41% and 83.59%, respectively, freshman accounted for 24.92%, sophomore accounted for 43.77%, junior accounted for 22.8% and senior accounted for 8.51% (**Table 1**). The proportion of this sample size (329) to the total number (845) of students in biology major is 38.93%, but the proportion of sophomore surveyed to the total number of sophomore is 80%.

Table 1. Information of college students majoring in biology.

Characteristic	Variate	Number	Percentage (%)
Gender	Male	54	16.41
	Female	275	83.59
Type ^a	Normal Student	232	70.52
	Non-Normal Student	97	29.48
Grade	Freshman	82	24.92
	Sophomore	144	43.77
	Junior	75	22.80
	Senior	28	8.51
Total		329	100.00

^aThe normal students are a class of college students, their major belongs to the direction of education, and their future employment goal is relatively clear to engage in teaching management work in various schools or educational institutions at all levels, and they are future teachers, non-normal students are the opposite.

The questionnaire covers college students' understanding of the employment situation, employment industry, expected salary, development space, rural revitalization and professional compatibility, etc. The survey data were analyzed and plotted by Excel software and the Cronbach's alpha of 0.627 which is higher than 0.6 and KMO value of 0.724 which is higher than 0.7 of the questionnaire were calculated by SPSS software, it indicates that the survey data is credible.

3. Result

3.1. The Concentration of Future Employment of Students Majoring in Biology

According to the survey (**Figure 1(A)**), 6.38% of college students majoring in biology have a good understanding of the current employment situation, 77.51% have a general understanding and 16.11% do not understand it, indicating that current college students do not pay much attention to the employment situation and do not have a deep understanding. In terms of the future work field, the survey found that 72.95% of college students majoring in biology want to enter the education department, 4.86% want to enter the government department, 11.85%

want to enter the state-owned enterprise, 6.69% want to enter the private enterprise, and 3.65% want to start their own business (**Figure 1(B)**), indicating that the current employment direction of students majoring in biology is concentrated and relatively single. Most students tend to work in institutions with stable employment or high social status.

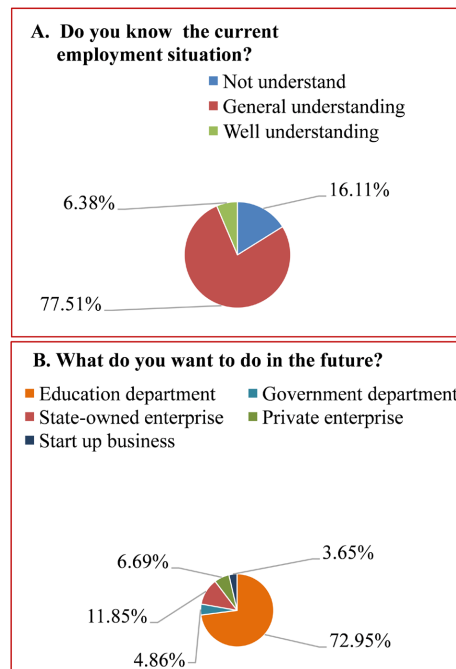


Figure 1. Analysis of survey respondents' understanding of the employment situation and their future work.

3.2. The Similar Employment Expectations of Students Majoring in Biology

The survey found that 35.87% of the students think that professional knowledge has more influence on future employment, 38.3% of the students think that teaching skills, 12.46% of the students think that employment concepts, 13.37% of the students think that value expectations (**Figure 2(A)**). It shows that the students of biology majors think that teaching skills and professional knowledge play a greater role in the future employment. 59.27% of the respondents think that salary is the most important factor in employment, 17.33% of the respondents think that work stability, 14.29% of the respondents think that working environment, 4.86% of the respondents think that work location, 4.26% of the respondents think that work challenge (**Figure 2(B)**). The respondents have different understanding of the salary of fresh graduates. 6.38% of the students think that the salary of fresh graduates is 3000 to 4000 China yuan (CNY), 31.31% of the students think that the salary is 4000 to 5000 CNY, 26.44% of the students think that the salary is 5000 to 6000 CNY, and 35.87% of the students think that the salary is more than 6000 CNY (**Figure 2(C)**). It shows that college students majoring in biology pay more attention to salary, followed by job stability.

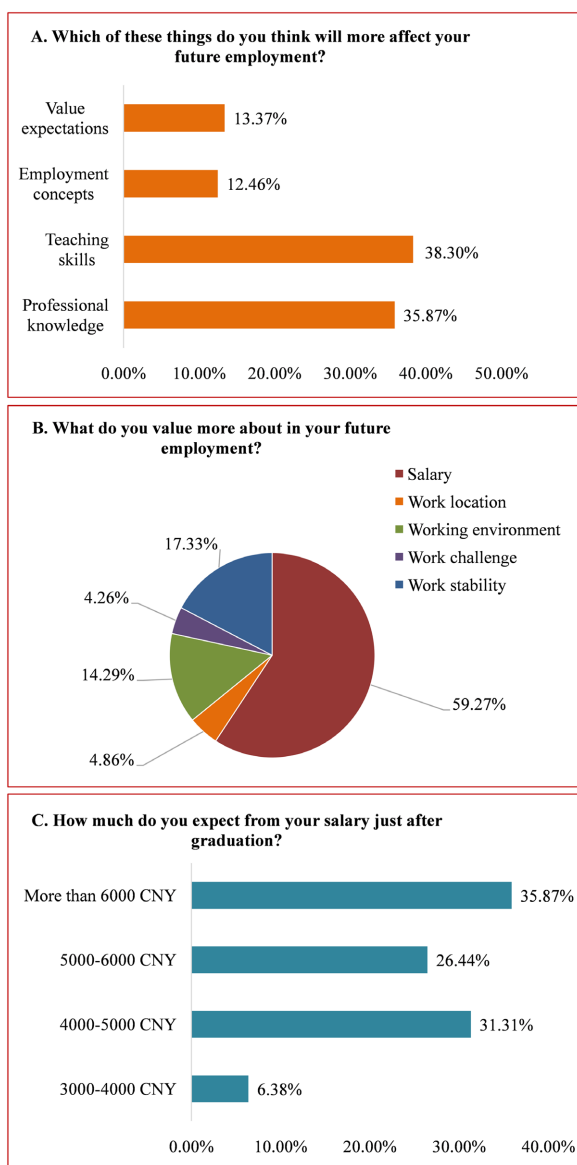


Figure 2. Analysis on factors affecting future employment of survey respondents.

According to the survey, students who will be engaged in the teaching industry analyze their employment expectations in different levels of schools in the future, and 29.79% of them will be employed in universities, 56.84% in high schools, 11.25% in junior middle schools, and only 2.13% in primary schools (**Figure 3(A)**). It shows that the employment expectation of biological majors in normal colleges is mostly concentrated on teaching in middle schools. As for the future employment as a teacher, 46.5% of the respondents prefer to work in urban schools, 23.1% prefer to work in big cities, 18.54% expect to work in first-tier cities, 11.55% expect to work in county schools, and only 0.3% expect to work in township schools (**Figure 3(B)**). It shows that college students majoring in biology are more inclined to work in urban and big city schools in the future, and the proportion of grass-roots counties and towns is less.

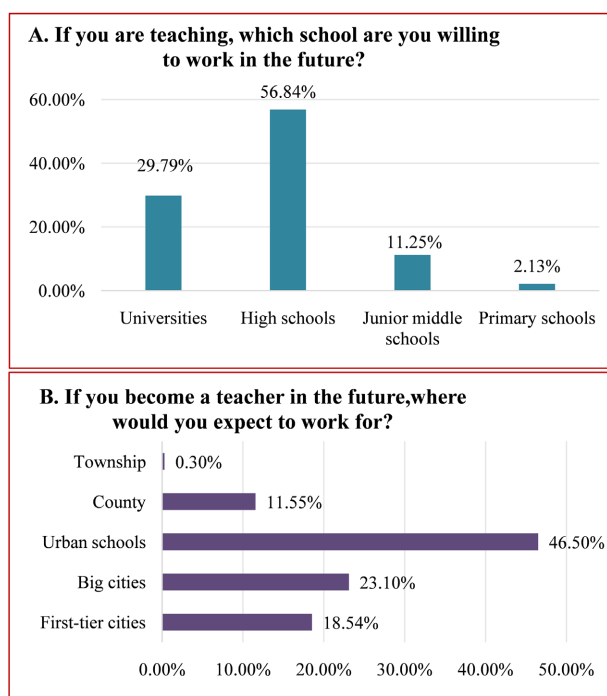


Figure 3. Analysis of the level and work area of the teachers.

3.3. A Certain Understanding of the Employer from Students

The survey found that 61.4% of the respondents think that the most important thing employers value in future employment is work attitude, 23.1% of the students think it is learning ability, 13.68% of the students think it is a sense of responsibility, and 1.82% of the students think it is physical and mental health (**Figure 4(A)**), indicating that the “work attitude” from the perspective of students is more important for employers in future employment. For future employment, 67.78% of students think it is learning ability, 10.33% think it is sense of responsibility, 9.42% think it is work attitude, 12.46% think it is physical and mental health (**Figure 4(B)**), indicating that most students think that the current learning ability needs to be further improved.

3.4. A Certain Understanding of the National Strategy for Rural Revitalization from Students

The survey in **Table 2** found that 13.68% of the respondents did not understand rural revitalization, 78.42% understood it generally, and only 7.9% of the students understood it very well. 46.81% of the students thought that the degree of compatibility between biology and rural revitalization was high, 47.11% was general, and 6.08% was not high. The results show that students pay little attention to rural revitalization, but they have a certain understanding of the compatibility between biological majors and rural revitalization. The survey found that 27.36% of the students majoring in biology were very willing to participate in rural revitalization, 61.09% were average, and only 11.55% were unwilling to participate in rural revitalization. According to the survey and analysis, 20.06% of students are very

willing to work in towns and villages, 63.83% are generally willing to work in towns and villages, and 16.11% are not willing to work in towns and villages, indicating that college students do not have high expectations for employment at the grassroots level.

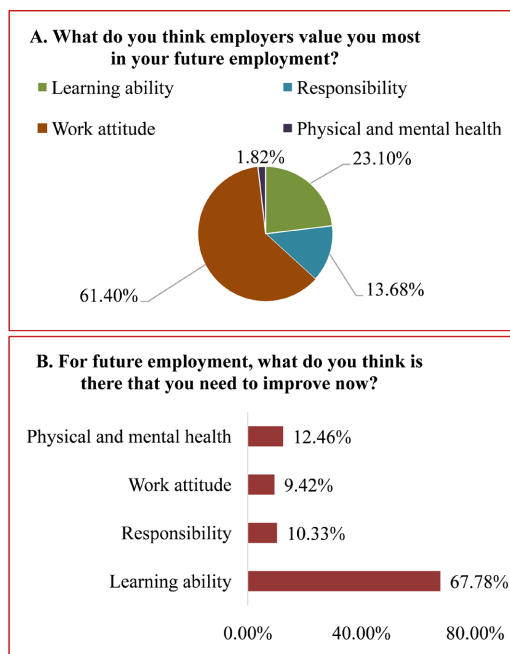


Figure 4. Analysis of survey respondents to employers value factors and improve employment.

Table 2. Analysis of respondents' willingness to participate in rural revitalization (n = 329).

Issues	Level	Number	Percentage (%)
1) What do you know about rural revitalization?	Not Understand	45	13.68
	Generally Understand	258	78.42
	Well Understand	26	7.90
2) Do you think biology majors fit well with rural revitalization?	Very High	154	46.81
	General High	155	47.11
	Not High	20	6.08
3) With your biology major, are you willing to devote yourself to rural revitalization in the future?	Unwilling	38	11.55
	Generally Willing	201	61.09
	Very Willing	90	27.36
4) Are you willing to work in the countryside in the future?	Unwilling	53	16.11
	Generally Willing	210	63.83
	Very Willing	66	20.06

3.5. A Full Understanding of the Quality Needs of Serving Rural Revitalization

According to the survey, in order to better participate in rural revitalization in the future, 92.1% of the respondents consider professional knowledge, 85.41% of them consider social practice, 84.5% of them consider teaching skills, 78.72% of them consider interpersonal communication, and 69% of them consider physical and mental health in **Figure 5**. It shows that students attach more importance to professional knowledge, social practice, teaching skills, interpersonal communication and mental health, and pay more attention to the study of professional knowledge.

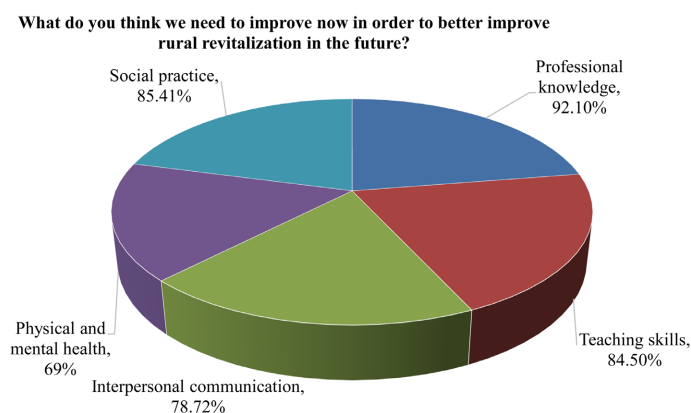


Figure 5. Analysis of survey respondents' ability to serve rural revitalization.

4. Recommendation

4.1. To Strengthen the Education of Employment Concepts and Take Root in Grassroots Services for Rural Revitalization

Value orientation determines the direction of a person's development, and it is difficult to promote a person's development in one direction if the concept does not agree. National development and national needs require more college students to go to the places where the country needs them, to the grassroots and to the rural areas to participate in the national strategy of rural revitalization. Scholars have studied that colleges and universities need to improve the mechanism of employment and entrepreneurship education, reflect the ideological and political function of employment and entrepreneurship education, cultivate college students' employment and entrepreneurship ability and good psychological quality, and then gradually change their employment concepts (Gao, 2024). If college students have insufficient understanding of rural revitalization and discrimination against grass-roots employment, the improvement of grass-roots employment services for rural revitalization is bound to be slow. Guide college students to establish the employment concept of taking root in grassroots services for rural revitalization from the following three aspects:

1) The implementation of accurate career planning education targeted to change the employment concept of college students. Career planning education is

a compulsory course for college students in university. It innovates curriculum teaching reform, relies on curriculum construction, accurately details and classifies career planning education for different majors and disciplines, provides rich targeted teaching cases, expands course teaching efficiency, and enhances professional identity and career acquisition, and then cultivates the values of college students serving the grassroots.

2) To expand the employment practice of college students to the grassroots, and deepen students' understanding and recognition of the grassroots. Social practice is an important carrier for college students to carry out the second classroom education and an important way to carry out vocational education. Employment concept education blends in social practice, at holidays, winter and summer holidays and other extracurricular time, we guide college students into the countryside and grassroots, make them to truly experience and understand the status quo of rural life, to stimulate the enthusiasm of college students to serve the countryside, and then we cultivate college students grass-roots employment feelings in the grassroots practice.

3) To expand the intensity of education and guidance. College education can not be separated from the cooperation of all departments, teachers, administrators and service providers to make joint efforts to achieve the maximum force of education. We need to adhere to the care of employment education for college students, there are systems at the school level, depth of teacher education, temperament of service providers, and effectiveness of management education, to ensure that education runs through the whole process of the university and truly realizes full participation.

4.2. To Strengthen the Training of Employ Ability and Improve the Ability to Serve Rural Revitalization

Serving rural revitalization needs talents, and talents must have good skills in order to display their talents in rural revitalization. We need to do four aspects as follow:

1) To consolidate professional knowledge. Professional knowledge is the first task for college students to study in colleges and universities, and it is also the basic knowledge for them to enter the society in the future, especially the professional knowledge used in serving the national strategy of rural revitalization. Whether it is to serve the development of rural agriculture, or to serve the development of rural education or to serve the development of rural infrastructure, all aspects need corresponding professional knowledge and talents. We can strengthen the teaching reform of majors with high compatibility for rural revitalization, through combining theoretical learning with practical education, classroom learning with grass-roots training, to promote the professional knowledge mastered by college students to be used and truly realize the application of what they have learned.

2) To cultivate teaching skills. As a normal college, the training of normal students pay attention to the improvement of teaching skills. The proportion of

students majoring in biology to be a teacher in the future is higher, and the teaching skills have a great impact on the future teachers' career. Increasing the training of teaching skills during school will be of great help to teachers' work in the future. In order to form a teaching skills training system for normal students, we teach them learning in class and practicing after class, promoting learning by competition and training by competition, carrying out teaching skills training programs, and carrying out group, systematic, standardized and modular training. We also can carry out the creation of quality courses, for example, to enter the middle school to carry out practical exercises, and truly improve the teaching skills of normal university students.

3) To enhance professional quality. Every profession needs to have a good professional quality, and the education industry is no exception. How to better serve the grass-roots education of normal college students, their professional quality should be excellent. We cultivate college students to love students, help them to establish a good relationship between teachers and students, so that they can better promote the all-round development of students.

4) To strengthen innovative education. Innovation is the soul of a nation's innovation. In any profession or industry, innovation is needed to make progress. Innovation is indispensable in employment skills, and it is the key to support whether job seekers go better and further. Universities carry out innovation and entrepreneurship education for college students and attach importance to the cultivation of students' innovative thinking, which is the whole process of innovation. Through "learning, creation, practice, competition and practice", college students can improve their individual innovative thinking and innovative consciousness.

4.3. To Strengthen Employment Guidance and Strengthen Employment Security at the Community Level

We offer three suggestions, as follows:

1) To work hard in organization and leadership. Employment is a people's livelihood project, colleges and universities should always put "stable employment" and "employment protection" in a more prominent position. It is necessary to strengthen organizational leadership and strengthen planning and layout. The secretary of the Party Committee and the president of university personally deploy to set up a leading group of employment work and hold special seminars in order to plan the layout of employment work and promote the progress of employment work. A relevant employment system should be established. For example, to formulate the implementation plan for the analysis of the employment situation of college graduates and the work of employment and entrepreneurship, the system of connecting the employment work of college leaders, the establishment of the employment file system and the employment reward system. From the organizational leadership, we need to strong guidance for employment work.

2) To innovate the guidance methods. Colleges and universities should actively build an integrated employment guidance system to ensure that employment

work is detailed and solid. It is necessary to pay attention to the four-level linkage which is school, college, tutor and student, and carry out innovative activities such as employment discussions, employment salons, and employment education to form a linkage effect. It is necessary to pay attention to the four stages of student training education include freshman career education, sophomore professional cognition education, junior professional quality education, and senior employment skills education, for phasing implementation of targeted education to improve the accuracy of employment work.

3) To improve employment quality. We should pay attention to and care about students with employment difficulties and truly do a good job in employment. For example, we establish the account of graduates with employment difficulties, find out the situation of students with employment difficulties one by one, establish electronic files, and arrange special personnel to carry out accurate services through online and offline, such as employment subsidy application, employment psychological counseling, employment skills improvement, job recommendation, career tracking and other accurate services.

4.4. To Improve Preferential Policies for Community-Level Employment and Enhance the Attractiveness of Services for Rural Revitalization

We offer three suggestions, as follows:

1) Continue to improve preferential employment policies by government departments. The state attaches great importance to employment, and the ministry of education emphasized that all localities and universities should implement policies such as tuition compensation and student loan compensation for college graduates at the grassroots level employment. At the same time, a series of preferential employment policies have been introduced. With the economic development, the changes of the times, the changes in people's needs and other factors, it directly affected the employment situation at the grassroots level. How to better promote the revitalization of college students to serve the countryside, to the grassroots, to the needs of the motherland, the national employment preferential policy should continue to improve.

2) Social resources take the initiative to exert social value. Social resources play an important role in the development of a country, and social participants are the main source of power for the progress of the whole society. The revitalization of rural areas is inseparable from the strong support of social resources. Some high-quality enterprises can tilt their business to the grass-roots level and increase the introduction of talent, especially some high-tech companies can expand investment in factory construction areas, and the development of enterprises contributed to the revitalization of rural areas. For example, some non-profit public welfare organizations, on the basis of serving rural revitalization, expand more platforms and opportunities, attract more aspiring young people to participate in them, and give full play to the social value of social resources.

3) The college should do a good job of extensive publicity and education. College students' understanding of preferential employment policies mainly comes from the publicity and education of schools. As a university, we should start with the formulation, interpretation and preaching of policies and carry out publicity and education in an all-round way. For example, we can make use of new media platforms, combine offline explanation and online publication, thematic sharing with daily discussion, and personal experience to comprehensively and extensively explain the preferential employment policies of government departments clearly and comprehensively, especially the preferential policies for grass-roots employment, and truly ensure that there are policies that must be known. We will encourage college students to be willing to work at the grassroots level and to work where the motherland needs them.

5. Conclusion

Employment is a systematic project, rural revitalization is a national strategy, but also a long-term persistence and continuous struggle of a cause. The research on the current situation and path analysis of biology major students in normal colleges in serving rural revitalization has a strong guiding role in guiding biology major students to take root in the grassroots and serve rural revitalization. The key to guiding college students majoring in biology to serve rural revitalization at the grassroots level lies in the value orientation of college students' employment. The education of employment concept is a long-term process of guiding education, and the participation of all students in various aspects of the environment jointly affects the better development of education students. At the same time, the object of this study is college students in biology majors. If the current situation of students in mathematics, Chinese, physics, chemistry, English and other disciplines is the same, in-depth research is needed to understand the actual situation. In a word, it is necessary to guide students in normal universities to have a comprehensive understanding of employment, promote students' all-round personal development, and then encourage students to take the initiative to go to the places needed by the motherland and actively serve the rural revitalization.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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