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# Analysis and Improvement Strategies of the Phenomenon that What Biology Teachers Teach is not What They Learned in Rural Middle Schools

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## Abstract

Rural education is a short board of China's education. It is of great significance to strengthen the construction of the teacher team in rural middle schools for Rural Revitalization in the new era. The problem of structural shortage of teachers, reflected by the phenomenon of "what biology teachers teach is not what they learned" in rural middle schools, is a key issue that has been existing for a long time in the development of rural middle school education in our country. It is also a key problem that must be paid attention to and urgently solved in the face of the new situation, new tasks and new requirements. In response to this phenomenon that caused by the decline of students and the loss of biological teachers in rural middle schools, the government needs to play a supporting role and the school leaders of rural middle schools should innovate their systems and concepts. What's more, biological teachers should reflect on their hearts and have the educational feelings of being willing to develop the countryside. Only when the government, middle school leaders and biology teachers have formed an educational synergy, can we better solve that harmful phenomenon and promote the healthy and rapid development of rural middle school education.

**Keywords:** Rural Middle School, Biology Teacher, Teach not What They Learned, Structural Shortage, Improvement Strategy

In recent years, our country has made many constructive measures for the revitalization of rural education. In the aspect of biology education and teaching in rural middle schools, the equipment of biology laboratory has been improved and the training of biology teachers has been strengthened. Besides, the curriculum standards and curriculum settings are more flexible considering the reality of rural middle schools. A series of improvement measures play an important role in improving the quality of biology teaching in rural middle schools.

In 2020, the fight against poverty has entered its final stage and the construction of Rural Revitalization will embarked on a new journey. Six departments including the Ministry of Education issued the “*Opinions on Strengthening the Construction of Rural Teachers in the New Era*”, focusing on the shortcomings and weaknesses to provide institutional guarantees for the happiness of rural middle school teachers (Ministry of Education, 2020). Although the state attaches great importance to the construction of teachers in rural middle schools, in actual rural middle schools, due to the regional economic and cultural differences and other factors, there are still some problems in the rural middle school teachers team, such as the shortage of teachers, serious loss, teaching not what they learned, aging knowledge structure and so on (Zhang, 2020). These problems are common among the biology teachers in rural middle schools. Therefore, this article conducts an in-depth analysis of the problems that biology teachers in rural middle schools teach not what they have learned, and puts forward targeted improvement strategies. It is hoped that it can help to improve the quality of biology education and teaching in rural middle schools and promote the healthy and rapid development of biological education in rural middle schools.

## 1 There is a phenomenon that biology teachers in rural middle schools not teach what they learned

### 1.1 The overall number of biology teachers in rural middle schools is relatively small

According to the relevant educational statistics released by the Ministry of Education official website in 2019, it can be found that the number of biology teachers in rural middle schools is relatively small as a whole. Due to the objective conditions of the differences between urban and rural areas in reality, there is a significant difference between the school-teacher ratio of the number of biology teachers in rural middle schools and that in urban and town areas. As shown in Table 1, in the junior middle school stage, there are on average 4.2 biology teachers in each urban junior middle school and 3.2 biology teachers in each town junior middle school. However, in rural areas, there are only 1.7 biology teachers in each junior high school on average, which is obviously different from the number of junior high school biology teachers in urban and town areas. While, at the ordinary high school level, there are 8.9 biology teachers in each urban high school and 9.4 biology teachers in each township high school on average. There are only 5.8 biology teachers in each rural high school, which is also quite different from those in urban and town areas.

Table 1: Statistics on the number of rural biology teachers nationwide in junior high schools and ordinary high schools in 2019

		Urban area	Towns area	Rural area	Total
Number of schools	junior high school	13390	24548	14477	52415
	ordinary high school	7190	6034	740	13964
Number of biology teachers	junior high school	55540	77529	24031	157100
	ordinary high school	64288	56785	4306	125379
Average number of biology teachers per school	junior high school	4.2	3.2	1.7	3.0
	ordinary high school	8.9	9.4	5.8	9.0

In addition, there is still a certain gap between the number of biology teachers in rural middle schools and the number stipulated by the state according to the class-teacher ratio and the student-teacher ratio. It can be seen that the number of biology teachers in rural middle schools is generally small. Therefore, in the construction of biology teachers' talent team, it is necessary to further strengthen the introduction and training of biology teachers to promote the steady improvement of the quality of biology education and teaching in rural middle schools.

## 1.2 Biology teachers in some rural middle schools are not teaching what they have learned

In the case of the overall small number of biology teachers in rural middle schools, some or even most of the biology teachers are concurrently held by teachers from other subjects. In a survey of the professional development of 121 rural middle school biology teachers in Jiangxi Province, it was found that not all of the 121 rural middle school biology teachers had a biology major (Figure 1) (Xiong, 2018). It can be seen from Figure 1 that only 43.7% of the biology teachers were from the biology majors and 10.4% were from the similar science majors in the surveyed rural middle schools in this province. While the proportion of teachers from other disciplines with relatively different backgrounds was as high as 45.9%. Among these people, there were even teachers from humanities specialties such as politics and history. In fact, this situation is actually common in rural middle schools across our country. It has been mentioned in many investigation and research documents that the biology teaching work in some rural middle schools is performed by teachers of non-biological related majors (Nan, 2017; Wen, et al., 2018; Weng, 2014). The main reason why teachers with non-biology-related education background are engaged in or hold a concurrent post of biology is that there is a shortage of biology teachers in rural schools. Therefore, teachers from other subjects who have spare capacity are selected to ensure the completion of normal biology teaching tasks.

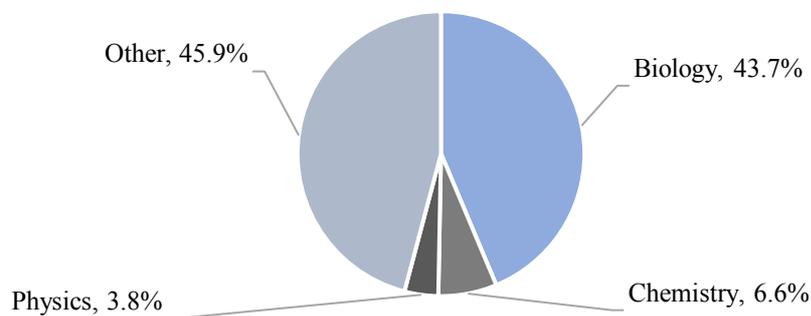


Figure 1: Composition of professional background of biology teachers in rural middle schools in Jiangxi Province (Xiong, 2018)

However, the opposite phenomenon exists in some rural middle schools. For example, in a survey of rural junior high school biology teachers in Maiji District, Tianshui City, Gansu Province (Chen, 2017), there were six biology teachers in one rural school. Three of them were teaching biology courses, one was teaching mathematics, one was teaching mental health, and the other teacher was working in the teaching office. When there was a need for biology teachers to participate in teacher training, it was replaced by other teachers who have free time and no lessons. This situation exists objectively and is also mentioned in other documents (Cao, 2018; Shen, 2013). It can be seen that under the general environment that the number of biology teachers in rural middle schools is relatively small, the number of biology teachers in some rural schools seems to be more, which leads to the phenomenon that some rural biology teachers are not teaching what they have learned.

## 2 The phenomenon that biology teachers in rural middle schools teach not what they have learned and the structure of the teaching staff

To some extent, it can promote the students to master the knowledge of different subjects with biology teaching by teachers of different majors in rural middle schools. For example, teachers who mainly teach Chinese can quote the poem “planting beans at the foot of Lu Mountain, grass flourishes but seedlings are scarce” to explain the population competition between weeds and soybean seedlings. According to the biological knowledge, the reason why “frosty leaves are redder than the flowers of early spring” is that under the influence of low temperature in autumn, the chlorophyll content in maple leaves decreases and the anthocyanins increase, which makes maple leaves appear red in autumn. In the combination of the beauty of poetry and the interest of biology, in the collision of rational thinking and perceptual thinking, students will be more adept at observing the creatures in ordinary life and have different understanding of the corresponding biological knowledge.

Although the above-mentioned approach has certain advantages, in general, the phenomenon that rural middle school biology teachers teach not what they learned is very unfavorable to the professional development of teachers. It is also not conducive to the improvement of biology teaching quality in rural middle schools. Teachers majoring in biology are better than non-biology professional teachers in the aspects of knowing well biology textbooks and syllabus, actively paying attention to the frontier knowledge of biological science, understanding the principles of biological experiments and operating skillfully. Besides, non-biology professional teachers may just echo what the books say, which will reduce the learning enthusiasm of middle school students and is not conducive to the cultivation of the core biological literacy of students. Therefore, this issue must be taken seriously.

In the final analysis, the phenomenon that biology teachers in rural middle schools teach not what they have learned reflects the structural lack of teachers, which is a common problem in the construction of rural middle school teachers. Structural vacancy of teachers refers to the problem of lack of staff that the total number of teachers reaches or exceeds the required number of staff, but the actual number of teachers in some subjects is insufficient or the number cannot meet the teaching needs (Zhang, 2013). The structural lack of teachers will cause the development of rural education to lag behind (Li, et al., 2020). In rural middle schools, the total number of teachers is overstaffed, but there are vacancies in some teaching posts, so they can only fill the vacancy with teachers from other subjects. Hence it happens, in some rural middle schools, non-biology teachers teach biology, while in other schools there are biology teachers teaching other subjects. The teaching work of mismatched majors can easily cause teachers to have a sense of job burnout, which is harmful to the professional development of teachers. Therefore, the phenomenon that biology teachers in rural middle schools teach not what they have learned, which reflects the structural shortage of teachers, is an important problem that must be paid attention to and urgently solved in the new situation, new tasks and new requirements of rural middle school education in our country.

### **3. Analysis of the reasons for the phenomenon that rural middle school biology teachers teach not what they learned**

There are many reasons for the phenomenon that biology teachers in rural middle schools do not teach what they have learned.

First of all, the loss of students in rural middle schools is serious. With the development of rural construction, many rural families have the conditions and are willing to choose better schools for their children. However, the existing conditions of teachers in rural middle schools can't meet the needs of students to pursue higher education quality, so rural students gradually flow to urban schools. With the decrease of students, more and more rural middle schools have the imbalance of teacher-student ratio (Guo, 2014). The extra teachers don't have suitable teaching posts, so there has been a contradiction that teachers with biological background teach other subjects, while teachers of other subjects teach biology courses in different rural middle schools.

Secondly, the rural middle schools do not pay much attention to biology in the curriculum setting. The entrance examinations of junior and senior high schools have different score arrangements for different subjects. Biology at the junior middle school level is not tested or gets less scores during the senior high school entrance examination, and the biology scores in the college entrance examination are the least among science subjects. In order to increase the rate of enrollment, schools reduce the study time of so-called "sub-subjects" and "partial subjects" in order to improve their teaching achievements more efficiently. However, as one of the "sub-subjects", biology can't get enough attention. In contrast to the so-called "sub-subjects", the school-teacher ratio of the number of biology teachers in rural middle schools is not as good as that of physics and chemistry teachers. As shown in Table 2, there are 1.7 biology teachers in a rural junior high school and 5.8 biology teachers in a rural ordinary high school on average, which is slightly different from the number of teachers in other two subjects. At the same time, due to the reduction of school students, rural middle schools generally arrange large-class teaching in order to make better use of teaching resources (Xue, 2020). A biology teacher teaches several classes. At the same time, there are many students in one class. Therefore, there are no needs for

so many biology teachers. It may be that teachers of other subjects are also teachers of biology, or extra biology teachers teach other subjects.

Table 2: School-teacher ratio of science teachers in rural middle schools in 2019

	Junior high school	Ordinary high school
Average number of biology teachers per school	1.7	5.8
Average number of physics teachers per school	2.6	6.9
Average number of chemistry teachers per school	1.7	6.9

Finally, biology teachers in rural middle schools are slowly losing. Although the country has been paying close attention to the development of rural education, the number of rural biology teachers has been gradually decreasing in recent years, as shown in Figure 2. There are differences between urban and rural areas in terms of working environment, welfare benefits, development space, training opportunities, etc. Urban schools, with better development conditions, are more likely to attract students and teachers to flow to the city. In addition, social prejudice against rural teachers is also an important reason for the loss of rural middle school teachers. In some rural areas, the salary and staffing situation of rural teachers is better than those of urban middle schools. However, due to the limitation of traditional thought that “rural areas are not as good as cities”, some teachers are ashamed of teaching in rural areas and try their best to enter cities to teach. Due to the difference of material treatment and social status, the number of rural biology teachers is less than that of urban schools. The newly graduated biology normal students are more inclined to go to the city to teach. And backbone biology teachers with rich teaching experience are more likely to be attracted to urban schools. It is difficult for rural middle schools to recruit biology teachers and retain excellent teachers. The imbalance of teaching structure makes it difficult for rural middle schools to catch up with urban middle schools in terms of teaching quality, which further aggravates the loss of students and eventually leads to a vicious circle. Some measures formulated by the state, such as free training of normal students, special-post teacher plan, can supplement the number of rural biology teachers to a certain extent. However, it still can't fundamentally change the structural shortage problem of biology teachers teaching not what they learned (Zhou, 2018).

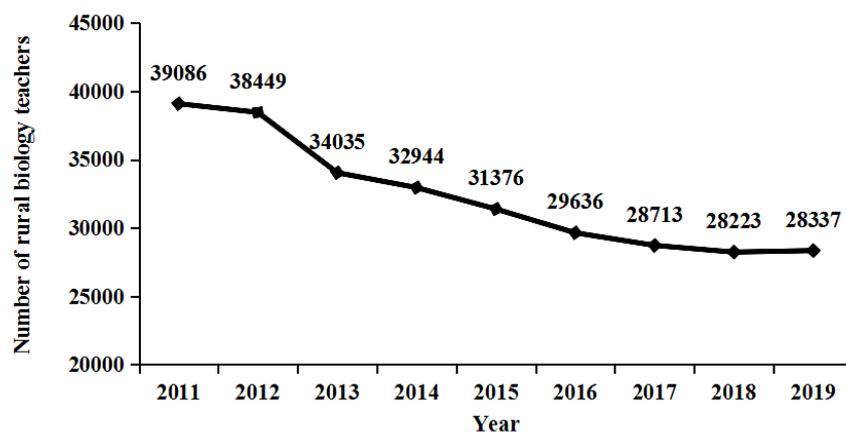


Figure 2: Statistics on the number of rural biology teachers nationwide from 2011 to 2019

#### 4. The improvement strategy of the phenomenon that rural biology teachers teach not that they learned

In view of the phenomenon of professional mismatch of biology teachers caused by the decrease of students and teachers and the deviation of school educational concept in rural middle schools, it is necessary to take the needs of rural middle school education as the guide, pay attention to the living conditions of rural teachers as the premise, take the macro-control of the government as the guarantee, focus on improving the overall quality, and

adhere to the fundamental task of cultivating morality and educating talents. By this way, the phenomenon that rural biology teachers teach not what they learned will gradually decrease and finally disappear. Only by keeping high-quality teachers can the quality of education in rural middle schools be improved.

#### 4.1 The state should give strong support

4.1.1 It is necessary to support the construction of rural middle school education and give material concern to rural biology teachers. President Xi emphasized at the National Education Conference that teachers are the key to running rural education well and they should be given more preference in policies and treatment. For the urbanization of rural education brought about by the urbanization of rural population, the government should take advantage of the trend, do a good job in top-level design, and rationally allocate the educational resources of rural middle schools (Liu, et al., 2020). In addition, a survey shows that (Yan, et al., 2019), factors such as position and income level have an important impact on the life satisfaction of rural middle school teachers. However, they are at a disadvantage in the evaluation of professional titles, especially the evaluation of senior professional titles. There are also significant differences between rural and urban middle school teachers in terms of wages and other treatments (Qin, et al., 2018). Therefore, it is necessary to improve the rural middle school teachers' treatment guarantee system, and give them appropriate preference in the aspects of professional titles, performance pay, housing security, medical assistance and so on, so that they will not "escape" from the countryside and the teaching work because of the hard life of rural. It is unrealistic to ask rural middle school teachers to dedicate selfless and ask for nothing in return. Only by giving them a realistic sense of security can they be willing to stay in the countryside and contribute to the Rural Revitalization. Only when the biology teachers in rural middle schools have a good living guarantee can more talents be brought in. So that they will be more willing to stay and devote more energy to invest in teaching.

4.1.2 It is necessary to reform the evaluation mechanism of middle school education and give spiritual care to biology teachers in rural middle schools. With the development of society, the thought of respecting teachers and promoting education has become more and more indifferent. The social status of teachers is not high, but the moral kidnapping of teachers has become more serious. Some teachers in rural middle schools are separated from the teaching staff and there are even some normal students who are unwilling to choose the profession of teacher. In 2020, the enrollment of public-funded normal school students in Henan Province only achieved less than two-thirds of the target, and even one of the county did not been completed any of the plans. The professional attractiveness of rural teachers is getting lower and lower. It is necessary to establish and implement the national teacher honor system as soon as possible. We should vigorously carry forward the good social customs of respecting teachers to give enough respect to rural middle school teachers and improve their social status (Zhou, 2020). We should form a good atmosphere in the whole society and get rid of people's mentality of discrimination against rural schools and rural teachers. To change the stereotyped conceptualization of rural teachers, it is no longer "suffering from hardship" and "low status", but "teaching with reward corresponding" and "realize the value of life", so that rural middle school teachers can identify themselves as teachers (Zhao, et al., 2018). The honorary support and good social recognition atmosphere can effectively improve the mental state of rural middle school biology teachers and endow them a sense of honor and a positive attitude to participate in teaching activities. It can make excellent biology teachers love rural teaching work and devote themselves to biology teaching (Jin, 2020).

In addition, it is necessary to reform the evaluation mechanism of middle school education and give rural biology teachers enough space to develop qualified education. If the education quality in China is to reach a new level, we must reform the present educational evaluation mechanism. Educational evaluation directs the orientation of running a school and is related to the direction of educational development. *The General Plan for Deepening the Reform of Educational Evaluation in the New Era* issued by the Central Committee of the Communist Party of China and the State Council puts forward that after 5 to 10 years' efforts, the evaluation system that makes teachers devote themselves to educating talents will be more perfect and the evaluation methods that make students develop in a all-round way will be more diversified (State Council, 2020). Therefore, in rural middle schools, it is necessary to improve the system of cultivating people by virtue and change the unscientific orientation of educational evaluation. For students, we should resolutely overcome the wrong idea of only focusing on scores and further education. For biology teachers, we should firmly break the

tendency of attaching importance to teaching but neglecting education. For rural middle schools, we should resolutely correct the one-sided tendency to pursue the rate of enrollment. For biology subject, we should abandon the concept of subcourse and face up to its educational value. In public opinion, it is strictly forbidden to publicize and hype the concept of famous schools and student champions to standardize the behavior of enrolling students and running schools. We should strengthen the interpretation of the concept of science education and guide parents to establish a correct view of education and talent. It is necessary to intensify the propaganda of the advanced deeds and typical teaching experiences of rural teachers to improve the teachers' moral cultivation and educational feelings of rural middle school teachers (Liu, 2020). Only by giving full play to the guiding role of education evaluation and carrying out the fundamental task of cultivating people by virtue to develop quality education, can we truly run a good education that satisfies the people.

4.1.3 It is necessary to strengthen the flow of teachers between urban and rural areas to bring vitality to biological education in rural middle schools. Various measures should be taken to guide the flow of outstanding biology teachers to rural middle schools. The rural areas should adopt various ways and means, such as regular communication, cross-school competition, integrated management of school districts, counterpart support, and group output of key teachers to guide the flow of outstanding principals and key teachers from cities and towns to rural schools. Make overall arrangements for the teaching exchange of teachers in the central schools of the township and villages teaching sites. Urban schools should set up special posts to accept new rural middle school biology teachers for on-the-job training to help improve the teaching staff of rural middle schools (Niu, 2020).

In addition, we should take various forms to strengthen the biology teachers' team in rural middle schools. Within the existing policy framework, the government should make various attempts to broaden the supplementary channels for rural middle school teachers (Zeng, et al., 2018). Combined with the needs of rural education, it is necessary to build a pattern that multilevel and multichannel teachers, such as high-end talents, backbone teachers, college graduates and retired teachers are eager to come to the countryside to teach and support rural education. We should innovate open recruitment methods for teachers and encourage talents to teach in rural areas. The government can implement the local special-post teacher program according to the actual situation. Through the implementation of the master of education teacher training program in rural schools, we can improve the teaching level of rural middle school teachers and optimize the age structure of middle school biology teachers so that more energetic young teachers could drive the vigorous development of rural middle school education (Hao, 2020).

4.1.4 It is necessary to fully implement the supervision system to effectively guarantee the rights of biology teachers in rural middle schools. The emphasis on rural education should not only be reflected in words, but also be put into practice. As for the reform measure of "county management and school employment", which can coordinate the allocation of teacher resources, there are still some problems in practice, such as excellent backbone teachers flocking to go to urban schools, excessive principal power, and dampening teachers' enthusiasm. It needs to strengthen supervision and guidance to local governments to make good policies effective (Ministry of Education, 2020). In addition, in the *Teacher Law*, the policy that "the salary of compulsory education teachers shall not be lower than that of local civil servants" has not been implemented in many places. Even the Education Bureau of a county, under the banner of encouraging teachers to improve their teaching achievements, committed the hurtful behavior of deducting teachers' salaries and bonuses. This year, the Ministry of Education issued a notice requiring all parts of our country to complete the goal of "teachers' salaries must not be lower than those of local civil servants" before the end of the year. The government should strengthen supervision, instead of all talk but little action, which makes the teachers in rural middle schools heartbroken.

The local party committees and governments are the main bodies responsible for the construction of rural teachers' team, so it is necessary to take the construction of rural middle school teachers' team as the key content of the work of the county and township party committees. It is important to strengthen the overall planning and establish a mechanism of leading by the education department and coordinating with all departments, so as to form a joint effort. To implement the work in place, teachers can really become the most respected and enviable profession in society.

#### 4.2 The leaders of rural middle schools should have leadership

Rural middle schools have more autonomy in education, and at the same time, they should give full play to their leadership, so as to truly seek welfare and contribution for teachers and students.

Rural middle schools should innovate education and teaching system. Schools with insufficient students can try to explore small class teaching mode and make full use of biology teacher resources. In some rural middle schools with a large number of biology teachers, they should not simply carry out “seeking for vacancies and filling the posts” to make biology teachers teach interdisciplinary courses after simple job transfer training, in order to improve the utilization rate of teachers. It can only solve temporary problems, which is not only unfavorable to the professional knowledge learning of students, but also unfavorable to the long-term development of teachers’ professional quality. Rural middle schools should strengthen the linkage and communication among regions. For those overstaffed schools that need to supplement full-time teachers, the existing staffing can be structurally adjusted across schools, and the sharing of biology teachers can be realized through cross-school part-time teaching and teachers’ moving teaching. In addition, rural middle schools can help teachers who have spare time outside of teaching to set up unique school-based teaching resources in combination with local culture.

Rural middle schools should have humanistic care for biology teachers. The principal’s responsibility is to help, support, explore and motivate teachers. Only when rural middle schools treat biology teachers with a correct vision and mentality and arouse their enthusiasm, can teachers be more willing to stay in the countryside and play their own value. Many rural middle schools already have relatively complete biology laboratories. Schools should encourage and support biology teachers to carry out experimental teaching and improve the biological science literacy of rural students (Yang, 2017). Rural middle schools should not consider the rate of enrollment and judge heroes by their achievements. While promoting the all-round development of middle school students’ knowledge, ability, emotion, attitude and values, it is necessary to realize that biology teachers in rural middle schools are not tools for imparting knowledge, but the enlightening coaches for students to explore the biological world. Rural middle schools should not only teach, but also educate. They should recognize the unique educational value of biology science and help biology teachers to explore unique educational models based on the countryside.

Rural middle schools should put teachers first and give biology teachers space to develop their creativity and individuality. Only when teachers have more autonomy in their work can they better improve their awareness of the role of teachers (Zhou et al., 2013). Young teachers in rural middle schools generally lack native soil feelings and have a sense of distance from rural students (Cai, 2019). It is necessary to encourage young biology teachers to truly go deep into the lives of people in the rural areas. It can not only enable young teachers to have a sense of belonging to the countryside and be willing to take root in the countryside, but also help them to link the knowledge of biology to the production and life in rural areas to better carry out life-oriented teaching and improve the quality of biology teaching. Dongping Jiedao Middle School in Dongping County, Shandong Province has done a very good job in this regard (Bu, et al., 2019). Based on the local culture, they organize science education with the most advanced curriculum concepts. To enhance students’ love of nature and hometown in a harmonious and interesting way, biology teachers develop club courses. They allow students to understand the severe living conditions of the wetland near the school through field inspections and consulting materials and explore the way of harmonious coexistence between humans and nature. In addition, the newly revised biology curriculum standards also set up a variety of elective courses, which are convenient for biology teachers in rural middle schools to explore unique school-based courses according to local conditions. Students can carry out animal and plant research according to local characteristics, understand local cash crops to develop environmental friendly awareness, recognize and classify local animals and plants, etc. It is of great significance to develop biological activity courses according to local conditions for cultivating students’ interest and getting them closer to their hometown and nature.

#### 4.3 Biology teachers in rural middle schools should have introspection

The country provides external guarantee for the development of biology teachers in rural middle schools, and rural middle schools provide space for them to play their expertise. More importantly, the rural middle school biology teachers themselves should learn to adjust their own mentality to provide internal motivation for improving their professional happiness.

Biology teachers should understand the characteristics of rural students and lead students to understand the vastness and magic of the biological world from the unique perspective of rural biology (Zheng, 2017). In the real, fresh and original biological environment in the countryside, biology teachers in rural middle schools should base themselves on the reality of rural life, be good at using rural materials to innovate biology teaching methods to build a biology humanities teaching mode based on the reality of rural life. For example, drowning has always been a major safety problem in rural areas. However, it is more effective to infiltrate life concept and safety education for students by explaining students' drowning prevention combined with biological knowledge and guiding students to carry out scientific rescue (Shen, 2016). In addition, they can explain to students combining practical problems such as burning straw in rural areas with ecosystem-related knowledge to cultivate their sense of social responsibility.

Biology teachers in rural middle schools should live in poverty but be content with the way. They should abandon the prejudice between urban and rural areas and be proud of the great profession of rural teachers. They should also abandon the concept of minor subjects and give full play to the professional advantages of biology science. Biology teachers should constantly reflect on themselves and actively participate in training to learn advanced concepts and teaching strategies. They should strive to improve teaching ability to contribute to the development of rural education. By obtaining inner satisfaction, the biology teachers in rural middle schools will change from "being forced to stay in the countryside" to "actively going to the countryside" and "actively staying in the countryside".

In response to the weaknesses of Chinese education, the education department has issued a series of policy documents to develop rural education. Significant progress has been made in rural schools' educational resources, environmental construction and teacher team construction. But in the process of construction, there are also many drawbacks. Entering the new era, the next step is to achieve "excellent" on the basis of "passing and good". We must strike a targeted blow to the outstanding problems of rural education and achieve precise policy implementation and precise education optimization. Regarding the phenomenon that rural middle school biology teachers not teach what they learned, all departments, schools, and teachers should do their best to actively respond, so that biology teachers can give full play to their expertise and the quality of rural education in China can be greatly improved.

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