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Research on labor education curriculum from the perspective of biology

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Abstract

With the continuous improvement of my country's comprehensive strength, the demand for talents tends to be comprehensive talents. In the education process, teachers need to be able to cultivate students with comprehensive development of moral, intellectual, physical, artistic and labor skills, which shows that the importance of labor education has become increasingly prominent. However, there are still many problems in my country's labor education. For example, there are still many misunderstandings in the understanding of labor education. There are still many problems such as one-sidedness, clock-in, marginalization, and touristyness in the implementation of labor courses. Therefore, based on the perspective of biology, this article explores how labor education can be scientifically and effectively implemented in biology, solves the problems existing in the labor education process, and implements the implementation of labor education courses to help cultivate all-round development of students.

Keywords: *biology; problems; labor education courses; all-round development*

1. Introduction

Labor is the process of creating material wealth and spiritual wealth, and it is a basic social practice activity unique to human beings. In recent years, with the continuous improvement of my country's comprehensive national strength, comprehensive talents have become an urgent need for the country, and labor education has also received much attention from the country. General Secretary Xi Jinping pointed out at the National Education Conference in September 2018 that it is necessary to cultivate socialist builders and successors with "moral, intellectual, physical, aesthetic, and labor" all-round development, emphasizing that students should carry forward the spirit of labor education, and that education should guide students to respect labor, understand that labor is the most glorious, and have the qualities of labor [1]. In 2020, the Ministry of Education issued the "Guidelines for Labor Education in Primary, Secondary and Elementary Schools (for Trial Implementation)" (hereinafter referred to as the "Guidelines"),

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which states that labor education is an educational activity that gives full play to the nurturing function of labor, and teaches students to love work and working people. At the same time, it is also pointed out that the focus of labor education is in addition to the systematic study of cultural knowledge, purposefully and systematically organize students to participate in daily life labor, production labor and service labor, so that students can do hands-on practice, sweat, receive exercise, sharpen their will, and cultivate students' correct labor values and good labor quality [2]. In 2022, the "Compulsory Education Curriculum Plan and Curriculum Standards (2022 Edition)" formulated by the Ministry of Education separated labor from the comprehensive practical activity curriculum and formulated an independent "Compulsory Education Labor Curriculum Standards (2022 Edition)" (hereinafter " Labor Curriculum Standards" abbreviation).Labor curriculum standards stipulate that labor education cultivates students' core competencies by purposefully and plannedly organizing children to participate in daily life labor, production labor and service labor, etc., with labor projects as the carrier and children's experience of the labor process as the basic requirement, that is, labor literacy [3]. Although the state and national leaders have attached great importance to labor education, but in the implementation of the labor curriculum there are still many problems such as one-sided, punching cards, marginalization, tourism, etc., both parents and students, and even most of the teachers agree that students' intellectual education is more important than labor education, the state advocates labor education as a sham, the root cause is that the front-line teachers did not combine the characteristics of the subject will be integrated into the corresponding curriculum of labor education. Biology is not only a theoretical course, but also a practical course, because there are many experiments involved on the basis of the theoretical course of biology, which require students to practice with their hands, and it has the natural advantage of labor education. Based on this, this paper will study the specific use of labor education in biological knowledge, break the barriers that the theory is divorced from the practice, respond to the policy of national education reform, and provide the front-line teachers with a reference to the practical methods, as well as to enrich the relevant theories on the specific implementation of labor education in biology.

2. Advantages of labor education curriculum development from the perspective of biology

The "Outline" clearly points out that the way of labor education is to independently set up compulsory labor education courses, organically penetrate labor education in academic disciplines and specialties, arrange labor practice in extracurricular and off-campus activities, and strengthen labor culture in campus cultural construction, so as to effectively solve the problem of having labor without education [4]. Biology is a basic natural science that is closely related to human production and life. It has unique advantages in cultivating students' labor awareness and good labor habits. At the same time, the theoretical knowledge of biology comes from production practice, and biological knowledge can be used to guide production labor and labor education. Labor education and biology are highly related and interpenetrating, so it has natural advantages to carry out labor education in biology teaching.

2.1. Practical advantages based on biology

Biology is a good carrier to carry out labor education, because biology is not only a course rich in theoretical knowledge, but also a practical course, which involves a lot of knowledge related to the reality in laboratory teaching, and the labor course is a course based on practice.In biology teaching, not only do we need to learn relevant biological knowledge, but also need students to do experiments with their own hands, carry out investigations, observations and other labor activities, students do experiments with their own hands, apply theories to practice, and come to the conclusion that "practice produces true knowledge", and understand the value and significance of labor, so as to set up the correct value of labor. Therefore, labor education is a good way to carry out biology teaching [5]. At the same time, biological knowledge can guide students in scientific work. In biology labor practice teaching, students through the experience of "learning for use", can establish "practice is the only standard for testing the truth" of the scientific concept, can be internalized and migration of knowledge, the courage to create and impulse, the willingness to update the knowledge of the will to mobilize the individual's intrinsic motivation to learn [6]. Through biological practical activities, students' scientific spirit and labor attitude can be cultivated, and students can be guided to respect science and act objectively, which is conducive to the improvement of students' scientific thinking ability and labor ability.

2.2. Advantages based on stimulating students' learning motivation and enthusiasm

High school biology textbooks contain a wealth of labor materials, labor literacy and labor spirit, teachers should be good at digging deep into the labor materials in the textbooks in the usual biology teaching, and cultivate students' labor literacy in the classroom of labor education scientifically in biology. For example, in the "Scientist Interview" column, teachers can tell the story of Yuan Longping, the "father of hybrid rice", in their usual biology classes by explaining the stories behind the scientists or playing relevant videos. Yuan Longping is a famous Chinese agriculturist. He is a pioneer and advocate of hybrid rice and has made great contributions to the agricultural development of China and the world. His story dates back to the late 1960s and early 1970s. In China, rice is the main food crop, but traditional rice varieties have low yields and cannot meet the needs of the huge population. Based on the National Day sentiment, Dr. Yuan Longping was sent to work at Guangdong Agricultural College (now South China Agricultural University) and began his hybrid rice research journey. He conducted in-depth research on the genetics and ecology of rice, and used cross-breeding methods to select and cultivate excellent hybrid rice varieties with high yield, disease resistance, and stress resistance by mating different rice varieties. The hybrid rice cultivated has higher yield and better resistance than traditional varieties, which has greatly increased China's rice production and effectively solved the food security problem. Yuan Longping's work has not only been highly valued in China, but has also had a profound impact on global food security and agricultural development. He has won many international and domestic honorary titles and has become one of the representatives in the field of agricultural science worldwide. Yuan Longping's story shows a scientist who has made a huge contribution to solving global food security problems through unremitting efforts and innovative thinking. His achievements have had a profound impact on modern agriculture. By understanding the life stories of great scientists in biology, their persistence, perseverance and perseverance in scientific research, students can awaken their awareness of labor, love labor, and qualitatively improve their understanding of labor instead of just completing the work. The

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understanding of daily household chores such as cleaning, mopping the floor, and washing dishes has been raised to the level of cultivating students' work spirit and work literacy. At the same time, let students feel and recognize that labor is great, happy and creative, thereby establishing a labor attitude of respecting and loving labor, and forming good labor values and professional outlook.

2.3. Advantages of biology-based career development

Based on the analysis of "the General High School Biology Curriculum Standards" (2017 Edition Revised in 2020), the curriculum structure of the new standard clearly stipulates that "career planning foresight" will be included in the elective modules, including "eight modules, such as biopharmaceuticals, marine biology, food safety and quarantine, occupational and prevention and control, horticulture and landscape ecology, environmentally friendly and cash crops, development and utilization of biological resources, and conservation of local threatened species" [7]. These modules are closely related to the emerging and popular fields of biotechnology or ecology, and are offered with the aim of guiding students to better employment as well as realizing the value of their lives [8], and thus contributing to the society. It can be seen that the occupations involved in biology exist in all aspects of daily life. Biology teachers can transform these modules into labor education topics, so that students can experience corresponding occupations in real life and stimulate students' interest in labor. For example, the module "Food Safety and Inspection" is transformed into the "Food Safety and Inspection" labor education topic, which is divided into occupations such as dietitian, food safety inspector, food health instructor, etc., so that students, through vocational experience, can perceive the labor process, labor value, and spirit of different occupations, and promote the love of labor among the students to cultivate their good vocational literacy and improve their ability to compete in the future occupation.

3. The significance of research on labor education courses from the perspective of biology

3.1. Correct misunderstandings about labor education

In the current practice of carrying out labor education, there are problems such as blurring the relevant concepts of labor education, finding no suitable labor education methods, and neglecting labor education. In terms of understanding of educational value, selection of educational content, design of educational form, selection of educational methods, and There are misunderstandings in resource utilization and implementation of educational evaluation. For example, in understanding the value of labor education, the value of labor education is equated with the value of comprehensive education; the content selection of labor education deviates from the original intention of education, leading to the generalization, narrowing and alienation of labor education; the design of labor education form lacks goal awareness; In the selection of labor education methods, education about labor is used instead of the real labor process; in the implementation of labor education evaluation, labor results are equated with labor education effects; the misunderstanding in the use of labor education resources is that labor education resources are simply equated with labor resources [9]. In addition, some people also associate labor education with crime, believing that people who make mistakes are caught in prison for "re-education through labor", and they stereotype that people who work are the people who make mistakes. In real learning, the phenomenon of being punished for cleaning is common. Students will preconceptionally think that students who make mistakes when doing labor have led to poor and minimal results in teachers' labor education. Therefore, based on biology, scientific thinking, scientific inquiry and social responsibility should be applied to focus on difficult issues in the development process of labor education, correct misunderstandings, and give full play to the correct educational function of labor education, so as to demonstrate the value of labor education in the times and promote the implementation of labor education.

3.2. Improve students' labor literacy and scientific literacy

Labor literacy refers to the attitudes, values and skills towards work that a person displays in work and life, and it covers a wide range of aspects, including work attitude, sense of responsibility, cooperation, problem-solving ability, communication skills, creativity and professional knowledge. In the process of biology-based labor education, the use of scientific knowledge, scientific thinking, scientific ethics and other scientific literacy to solve practical problems in the labor process can promote the correct values, necessary character and key abilities adapted to the needs of individual lifelong development and social development, which are gradually formed in the process of learning and labor practice, and at the same time, it can improve the students' labor literacy and scientific literacy. An individual with good labor literacy is usually able to demonstrate efficient, high-quality performance at work and cooperate with others to achieve common goals. Developing good labor literacy helps individuals succeed in their careers and also contributes to the development of organizations and teams. In education and work environments, focusing on cultivating and improving labor literacy can help individuals better adapt to social and professional needs, enhance competitiveness, and better achieve individual and team development goals. Developing good scientific literacy is of great significance to both individuals and society. It also helps students better understand the world, make rational decisions, respond to technological developments, and better integrate into an increasingly technological social environment. At the same time, it can also help students understand the nature, methods and values of science, and be able to use scientific knowledge and thinking methods to understand and solve problems in daily life.

3.3. Improve the unique value of biology education

The core competencies of the biology discipline include four dimensions, among which scientific thinking, scientific inquiry and social responsibility are common attributes across disciplines in the field of natural sciences, while the concept of life is a unique attribute unique to the biology discipline. As a unique dimension of the core literacy of biology, the concept of life not only gives biology its unique life and vitality, but also embodies the core educational value of this discipline [10]. Based on labor education from the perspective of life concept, students can feel the rhythm of life in the world and the beauty of different lives, and consciously love, cherish and revere life. For example, in the "peanut seed germination" inquiry experiment, through the observation and cultivation of peanuts from a seed to a complete plant to the plant's demise of the labor process, hand and brain, feel the beauty of life, life's tenacity and fragility, and only in the appropriate conditions of life will appear, the students take the initiative to actively explore the meaning of life, to stimulate the students' enthusiasm for labor to enhance the labor literacy and labor sentiment.

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3.4. Promote the effective implementation of labor education

The "Labor Curriculum Standard" points out that labor courses are based on labor projects as the carrier, labor task groups as the basic unit, and around three types of labor: daily life labor, production labor and service labor, and construct a curriculum structure suitable for student development [11]. As far as biology is concerned, it is a subject closely related to daily life and production. The two have similar approaches, methods, values, and environments in educating people, and they have similarities and similarities in the goals of educating people. Labor education based on biology can encourage students to work enthusiastically and not be limited by the value of labor itself. It can explore the value of labor from the perspectives of science and innovation, which is conducive to promoting the effective implementation of labor education.

3.5. Promote quality education through labor education

At present, China's education reform requires the implementation of quality education, and one of the most crucial aspects of the implementation of quality education is the development of labor education, which is a basic requirement for the comprehensive implementation of the Party's education policy, and which can promote the implementation, improvement and development of quality education. At the same time, the requirements of the new curriculum reform can also be implemented. Carrying out labor education in courses and activities combining physical and mental labor can improve students' comprehensive abilities such as the ability to work with their hands, the ability to solve problems, and the ability to innovate, and at the same time, establish a view of labor that admires, respects, and loves labor, and ultimately cultivate the labor ability of students to work diligently, to work well, and to work innovatively. In addition, labor education under the perspective of quality education aims to promote the all-round development of students. Mainland my country implements the socialist system proposed by Marxism. The adoption of the education policy of all-round human development is in line with our country's national system and is also part of our country's " Education must be integrated with productive labor and social practice" is the basic requirement of the education policy. Labor education is an important way of quality education and an important component in promoting the all-round development of students. It has educational value that cannot be ignored. Labor education also implements the five-education education policy, establishing morality through labor and fostering a moral outlook on labor; increasing intelligence through labor and fostering an innovative outlook on labor; strengthening the body through labor and promoting healthy growth; and nurturing beauty through labor and resisting students learning to discern the values of good and evil.

4. Implementation strategies to promote labor education based on biology

4.1. Integrate labor education into biology courses

For students majoring in biology-related majors, labor combined with scientific research is more meaningful and can better fulfill the function of labor education. In labor education, students are encouraged to use professional knowledge and carry out real labor practice in the actual social environment. By experiencing the production labor process, students can better understand and master professional knowledge and promote the improvement of professional labor ability. For example, Southwest University carefully processes the potatoes grown by students and then opens a special free tasting window in the school cafeteria, inviting teachers and students to share the fruits of labor and experience the joy of labor; Wuhan University has held labor education classes in hybrid rice experimental fields. The students experienced the rice harvesting and threshing process firsthand. With the help of the instructor, the students also conducted investigations on rice variety traits such as rice panicle length, thousand-grain weight, number of grains per panicle, and number of solid grains to deepen their understanding of professional knowledge. At the same time, during the labor process, the instructor introduced the hard work of many outstanding scientists in our country to the students, which deepened the students' understanding of the meaning of scientific research to serve the country. Through labor practice, students realize the meaning of labor, learn to understand the hard work of others, and learn to respect the fruits of labor [12].

4.2. Integrate labor education into experimental teaching

Experiments are an important part of biology teaching, and conducting biological experiments can help improve students' mastery of labor skills. Through independent design, experimental exploration and other links, students can master basic experimental labor skills, understand and apply knowledge in experimental labor, and promote students to improve experimental skills, problem-solving abilities and labor ability. In addition, through the activities of putting forward hypotheses, designing experiments, verifying hypotheses, drawing conclusions and sharing conclusions, students stand in the perspective of scientists to carry out experiments, experience the charm of science, and use the obtained experimental results to solve real-life practical problems, to achieve further understanding, internalization and transfer of knowledge, and at the same time, they realize that labor and practice can not be ignored for the discovery of any results. For example, in the experimental teaching of "Comparison of the decomposition of hydrogen peroxide under different conditions" in Compulsory Study 1, the teacher guides the students to carry out experiments based on the experimental content of the textbook and innovate the experiments, and guides and encourages the students to find out the problems in the process of the experiments on the basis of the experiments in the textbook. In response to the problems discovered in the experiment, independently design and innovate experimental plans, and have the courage to use intellectual labor to solve problems. Through the combination of hand and brain work, students can experience the joy of labor and improve their enthusiasm for labor practice; let students conduct labor experiments to cultivate students' good labor quality and meticulous scientific attitude, and implement the effective implementation of labor education.

4.3. Integrate labor education into the history of biological sciences

The history of biological sciences provides rich materials for labor education. The discovery and application of biological knowledge, the exploratory spirit of biological scientists and the stories behind them all provide rich teaching material resources for cultivating students' labor spirit. There are many famous scientists in the history of biological development. It is their perseverance and perseverance in exploring that have revealed the truth about the development of life. For example, in the compulsory 2 chapter 1 "discovery of genetic factors" in this chapter, Mendel used to put the years to complete the pea hybridization experiment, the teacher only stays in the teaching of the spirit of Mendel's labor, the students can not truly appreciate the greatness of the spirit of labor

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of scientists and the discovery of the fruits of scientific labor is not easy, the teacher can lead in the experiments within the student planting of peas, selecting a good pea seed seed sowing, the later to the peas, watering, fertilizer and peas grow up to observe the phenomena of relative traits, traits, such as the phenomenon of segregation, so that the students in the process of planting peas to appreciate the scientists' unremitting, perseverance and fear of hard work and the labor of the spirit of the labor of the scientists. At the same time, understand that the research results obtained by scientists through labor are very precious to human beings and promote the development of human society, and ultimately enable students to form a labor attitude of respect for labor and love of labor, so as to set up a correct view of labor and occupation, and enhance their own sense of social responsibility.

4.4. Develop school-based curriculum

School-based courses refer to special courses with school characteristics or local characteristics developed by teachers based on the national education policy and on the basis of analyzing the school situation and academic situation. While retaining the traditional educational function, school-based courses can supplement and innovate theoretical or experimental courses, sort out knowledge points not covered in the classroom, and extend them appropriately [13]. School-based courses are an effective form of labor education and an important exploration of biology teaching models. Flexible and diverse biology school-based courses are an important link and effective way for schools to carry out labor education. Biology school-based curriculum belongs to the subject expansion courses, teachers can be based on the goals of human education in biology and curriculum standards, based on the disciplinary vision, give full play to professionalism, rational use of resources around them, in the biological cultural atmosphere of the flexible combination of theory and practice, to carry out a variety of teaching activities based on the characteristics of the school, give full play to the role of the main body of the students, to enhance student participation in teaching and learning activities, and to enhance the students' core qualities of the discipline of biology [14]. For example, "Microorganism Banquet" is a school-based course for the second grade of the No. 1 Middle School of Science City in Mianyang City, Sichuan Province. This course organizes students to participate in learning in a club every Thursday afternoon, once a week, with a number of 30-40 people. Thematic teaching methods are adopted and traditional culture such as brewing technology is integrated into the biology curriculum system. About 9,000 years ago, our ancestors used microorganisms to ferment grains, fruits, etc. into alcoholic beverages. Brewing technology added value to the lives of ancient people. It has rich colors, and many of the ancient wine-making techniques have been preserved and continue to this day. Students learn about my country's long history and culture during the experimental exploration process. This course mainly combines the reality of life and cultivates interest in learning. During the teaching process, it is presented in the form of video demonstrations and practical operations, group cooperation and exchanges, and student achievement display and interaction. After class, attention is paid to the display of relevant results. Students deepen their love for biology courses in practice and actively promote and inherit traditional culture. Through the study of this course, students will be led to appreciate the charm of ancient fermentation, taste the art of food, feel a healthy lifestyle, inspire the enthusiasm for learning biology, and cultivate the spirit of loving labor.

4.5. Enhance labor awareness based on extracurricular practice

Extracurricular activities are an important way to carry out labor education. Teachers should organize students to participate in labor-related extracurricular activities, change the previous concept of using labor as punishment, guide students to establish the concept of being proud of labor, and enable them to experience the happiness brought by labor. Teachers can stimulate students' interest in labor through school activities, family activities and social practice activities [15]. For example, the following are some specific examples of social practice in the botanical garden: leading students to visit the botanical garden, allowing them to observe various plants up close and understand the morphological characteristics, growth habits and adaptation of the plants to the environment. At the same time, you can organize docents to explain the classification, characteristics and ecological significance of plants, or carry out experimental activities of observing plants; through observing different kinds of animals, their behaviors, breeding management, etc. in the zoo, learn about animal behaviors, living habits and ecological adaptations, and learn about zoology; in the science museums: go to the science museums, especially the natural history museums or the thematic exhibitions of biology, so that the students to learn about biological knowledge such as biological evolution, species diversity, cell structure, etc. through models, specimens, interactive displays, etc.; to lead students to farms or agricultural science and technology parks, so as to enable them to learn about modern agricultural technology and observe the process of planting, management and harvesting of different crops. And lectures can be given by farm staff to introduce modern agricultural technology and the development of agricultural science and technology. These social practice activities can help students consolidate the biological knowledge learned in class, expand their horizons, and deepen their understanding and understanding of the field of biology. At the same time, through visits and observations, students can more intuitively feel the application and importance of biology in real life. In the process, students can experience the joy of labor and enhance their labor consciousness.

5. Conclusion and outlook

The purpose of labor education is to cultivate students' abilities to lead a happy life, but a happy life is based on hard work. Students doing housework and cleaning at school are just simple labor in their daily lives, and labor education is based on simple labor so that students can develop a sense of love for labor and understand the greatness of working people. In the process of implementing labor education, students learn basic labor skills, are able to perform self-service better, actively serve others, consciously participate in household chores, correct misconceptions about labor education, and agree that labor is an important way to lead a happy life in the future. In addition, teachers should refine the content and scope of labor education, expand more forms of family labor education and various types of off-campus comprehensive practice bases and activity centers, and broaden the links and paths of students' off-campus labor and off-campus services. Ultimately, this will promote the implementation of labor education and enhance the awareness of labor education.

References

1. Xi Jinping emphasizes at national education conference, Adhering to the path of development of socialist education with Chinese characteristics, cultivating

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socialist builders and successors with all-round development in morality, intelligence, physicality, aesthetics and labor,People's Daily (PRC newspaper),(2018).（习近平在全国教育大会上强调: 坚持中国特色社会主义教育发展道路，培养德智体美劳全面发展的社会主义建设者和接班人. 人民日报.）
2. Ministry of Education.Guidelines for Labor Education in Primary and Secondary Schools and Universities (for Trial Implementation).Ministry of Education of the People's Republic of China,(2020).（教育部.《大中小学劳动教育指导纲要(试行)》．中华人民共和国教育部．）
3. Ministry of Education of the People's Republic of China.Compulsory Education Labor Curriculum Standards (2022 Edition).Beijing Normal University Press, PRC,(2022).(中华人民共和国教育部.义务教育劳动课程标准（2022年版）.北京师范大学出版社.)
4. Chen Qiulai.Implementation of labor education in high school biology teaching.Teaching and management,(2021).(陈秋来.高中生物学教学中劳动教育的实施.教学与管理.)
5. Wang Xuexiang, Wang Xu, Jiang Ping et al.A Study on the Ways of Integrating Labor Education into High School Biology Teaching.principals,(2022).(王学香,汪旭,姜苹等.劳动教育融入高中生物学教学的途径研究.教师.)
6. Xie Xueshan.Integration of Labor Education and Biology Teaching in the New Era.Science and Education Literature (Middle Periodicals),(2020).(谢学姗.新时代劳动教育与生物学教学的融合.科教文汇(中旬刊).)
7. Ministry of Education of the People's Republic of China.Biology Curriculum Standards for General Senior Secondary Schools (2017 Edition Revised in 2020).People's Education Publishing House (PRC),(2020)(中华人民共和国教育部.普通高中生物学课程标准（2017年版2020年修订）.人民教育出版社.)
8. Tian Jingle.A Study on the Infiltration of Career Planning Education in High School Biology Teaching.湖南师范大学,(2020).(田静乐.高中生物学教学渗透生涯规划教育的研究.湖南师范大学)
9. Guan Xingying.Exploring the Practical Misconceptions of Labor Education in the New Era.Teaching and Learning Monthly - Secondary School Edition (Teaching and Learning Management),(2023).(关兴莹.新时代劳动教育的实践误区探析.教学月刊·中学版(教学管理).)
10. Wang Heping,Wang Xu,JiangPing.Strategies for Cultivating the Concept of Life in Middle School Biology Teaching.new wisdom,(2022).(王和平,汪旭,姜苹.初中生物学教学中生命观念的培养策略.新智慧.)
11. Gu Jianjun.Constructing an Integrated Labor Curriculum to Lay the Foundation for Compulsory Education Labor Nurturing--Interpretation of the Compulsory Education Labor Curriculum Standards (2022 Edition).Global education outlook,(2022).(顾建军.建构一体化劳动课程为义务教育劳动育人奠基——《义务教育劳动课程标准（2022年版）》解读.全球教育展望.)
12. Wang Yanhong.Strategies for Integrating Life Science Curriculum Teaching and Labor Education Practices.technological trend,(2022).(王艳红.生命科学类课程教学与劳动教育实践的融合策略[J].科技风.）
13. Ma Xiaomei,Jiang Zhaohong.Research on the development of high school biology school-based curriculum based on core literacy.intelligence,(2021).(马晓梅,江兆洪.基于核心素养的高中生物校本课程开发研究.智力.)
14. Zhou Jing,Guo Xiangyu,Fang Shuaijun et al.Current Situation and Countermeasures for the Construction of Secondary School Biology School-based Curriculum and the Infiltration of Labor Education.science education and literature,(2023).(周婧,郭翔瑜,方帅军等.中学生物学校本课程建设及渗透劳动教育现状与对策.科教文汇.)
15. Qiu Yu,Lai Yunxiang. Exploring the Effective Path of Integrating Labor Education in High School Biology Teaching.Teaching and Research on the National Common Language and Writing System,(2022).(邱雨,黎云祥.在高中生物教学中融入劳动教育的有效路径探析.国家通用语言文字教学与研究.)

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