

Collaborative Practice Study on Modern (New Era) Agricultural Science and Technology Resources Empowered Labor Education

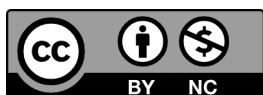
— A Case Study of Cooperation between a High School Affiliated to Beijing Normal University and Pinggu Agricultural Zhongguancun College

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Abstract: To further implement the policy requirements related to labor education, the High School Affiliated to Beijing Normal University and Pinggu Agricultural Zhongguancun College jointly launched an immersive agricultural practice activity themed “Learning through Spring Farming · Cultivating Virtue via Labor Education” in April 2025. Targeting 875 eighth-grade students, the activity constructed an innovative labor education model integrating “agricultural science practice - life education - cultural infiltration”. Through the development of four types of characteristic agricultural science and technology practice bases, the establishment of a “four-stage connection” labor education implementation system, and the building of a “three-dimensional linkage” practical education community, the research achieved comprehensive improvement of students’ core literacy, innovative breakthroughs in the development model of resource units, and replicable promotion of the collaborative education mechanism. This practice provides typical experience for primary and middle schools to carry out practical education relying on regional characteristic agricultural science and technology resources. It promotes the upgrading of traditional labor education into a comprehensive education process that integrates scientific and technological exploration, cultural infiltration, character shaping and ability improvement.

Keywords: Agricultural science and technology resources; Labor education; Collaborative practice; Core literacy; Social classroom



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To further implement the Guidelines on *Improving the Practical Education System for Primary and Middle Schools by Relying on the Social Classroom in Beijing*, the High School Affiliated to Beijing Normal University launched in-depth cooperation with Pinggu Agricultural Zhongguancun College in April 2025. With the theme of *Learning through Spring Farming·Cultivating Virtue via Labor Education*, the school carried out a 3-day and 2-night immersive agricultural practice activity for 875 students in the eighth grade. Focusing on the “development and construction of characteristic resources by resource units and the characteristic activities launching”, the activity has built an innovative

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Article Citation: Wu, X. N., Hu, P., & Kang, L. (2025). Collaborative Practice Study on Modern (New Era) Agricultural Science and Technology Resources Empowered Labor Education — A Case Study of Cooperation between a High School Affiliated to Beijing Normal University and Pinggu Agricultural Zhongguancun College. *Guide to Education Innovation*, 5(4), 276-282.

labor education model of “agricultural science practice-life education-cultural infiltration”, providing a typical experience for practical education in primary and middle schools.

1 Featured Development of Resource Units: Building a Group of Agricultural Science Practice Bases

The school actively introduced the practical social resources and constructed a three-dimensional classroom through a progressive labor education model that extends from campus clubs to local communities and then to the broader society. Linked to the local governments, top scientific research institutions and leading enterprises in the industry, Zhongguancun Pinggu Agricultural College has built five major practice base groups, centered on the resource development of these bases, focusing on “integration” and “innovation”.

1.1 The Whole Industry Chain Experience: Connecting “Countryside Field” to “The Table”

The collaborative bases enable students to explore the complete industrial chain from crop planting, through processing, to circulation and sales. Helping them to understand the systematicness and coordination of modern agriculture.

Dr. Corn’s Farm (Beitaitou Village, Pinggu): An immersive curriculum system embraced with a process of “cognition - planting - harvesting and preliminary processing - deep processing - cooking - marketing” has been set up, which integrates scientific research, traditional crafts, modern processing and emerging business formats. It allows the students to experience the charm of the agricultural technology evolution and industrial integration. The students have not only practiced expressive ability through the live broadcast session, but also understood the value chain that connects labor achievements with the market.

Kang’an Lifeng Vegetable Base (Mafang Town): As the largest enterprise in Northern China focusing on “fresh vegetables for food catering”, the base has built a full-process chain covering “field harvesting - cold chain preliminary processing and sorting - warehousing and logistics”. Experienced with the technological support and strict management standards behind modern agricultural products, the students have realized the importance of efficiency and the food safety rules in modern agriculture.

1.2 Ecological Agriculture Innovation Bases: Practicing the Concepts of “Green” and “Circular”

Focusing on resource recycling, ecological balance and sustainable development, these bases present the picture of green agriculture empowered by science and technology.

Ecological Bridge National Peach Base (Liujia Dian Town): The base adopts a closed-loop recycling model of “waste peach branches → crushing and fermentation → organic fertilizer → application in peach orchards”. It has effectively solved regional environmental problems. The students learnt the principle of compost fermentation and participated in the application of organic fertilizer. Subsequently, they mastered the ecological control technology of fruit tree diseases and pests, and experienced the ecological wisdom that “lush waters and mountains are invaluable assets”.

Chinese Herbal Medicine Planting Base (Dongfange Zhuang, Yukou Town): In cooperation with the China Academy of Chinese Medical Sciences, the students learnt to identify Chinese herbal medicines, transplant wild

chrysanthemums, and take care of cute pets. They also learnt to make Pinggu big peach blossom buns, and match understory economic products with traditional Chinese medicine health-preserving soup. This base integrates the inheritance of traditional Chinese medicine culture, understory ecological planting technology, cultural heritage handicrafts and life education. Therefore, it has become a vivid classroom for cultural inheritance and ecological agriculture.

1.3 Science and Technology Research Immersion Bases: Exploring the Mysteries of Nature and Bionic Wisdom

By realizing the innovative integration of traditional industries with modern science and technology, basic research with application innovation, these bases stimulate interest in scientific exploration.

Happy Bee Farm (Yukou Town): With 50 years of technical accumulation, Happy Bee Farm has designed highly interactive inquiry courses, including observing the social structure of bees, observing live queen bees under microscopes, making beeswax lip balm, experiencing traditional honey extraction methods, and revealing the scientific principles related to bees through interactive experiments. These activities interpret the theme of “understanding life and approaching science”, and effectively cultivate students’ scientific thinking and inquiry spirit.

1.4 Three Innovation Cores in Resource Development

(1) The curriculum is deeply connected with high-end scientific research resources. Forty-two experts in various fields have been employed as tutors to ensure the professionalism of the curriculum content.

(2) Hardware facilities match educational needs. Each base has been transformed for educational purposes, with safe-teaching workstations, farm tools and protective gear suitable for students, protective mats laid in key areas, and traditional and modern equipment displayed side by side for comparison. At the same time, professional sound amplification and live broadcast are equipped, turning industrial scenarios into vivid “hardware teaching materials”.

(3) Comprehensive emergency scenario plans ensure continuity. Detailed emergency plans, rich indoor alternative course packages, and sufficient emergency materials have been reserved — all to ensure that practical activities can be carried out safely, orderly and fruitfully through all circumstances.

2 School Practice Innovation: Building a “Four-Stage Connection” Labor-Educated Implementation System

Combined with the characteristics of base resources, the School Affiliated Beijing Normal University has constructed an implementation framework of “stratified goals - divided processes - phased evaluation” to ensure the effective achievement of labor education goals.

2.1 Three-Level Competence Goal Design

(1) Basic Level (Skill Acquisition and Habit Formation): This level is to ensure that students master 16 core agricultural and life skills, forming basic labor operation ability and self-care habits in their lives.

(2) Development Level (Improvement and Problem-Solving): This is to guide students to think deeply in practice,

such as understanding ecological balance, establishing a sense of standardization, analyzing the value of the industrial chain, comprehending systematic thinking, as well as the ability of communication and cooperation and finally, solving practical problems.

(3) Transcendence Level (Value Identification and Character Shaping): Through personal experience of the labor process, the students gain a deep understanding of the true meaning of “labor creates value”, establish a correct view of labor, cultivate the character of respecting labor, loving labor and cherishing achievements, enhancing social responsibility and respect.

2.2 Dual-Track Parallel Curriculum Implementation Mechanism

A dual-track and mutually promoting implementation mechanism of “agricultural practice + life education” is adopted. Agricultural Practice (Professionalization, Rotation System, Task-Driven): Students are divided into four major groups, and take turns to conduct in-depth learning on various bases, with fine management ensuring the efficient operation of activities. In some bases, “responsibility fields” are assigned to groups, using task-driven methods to cultivate students’ hard-working spirit, team cooperation awareness and sense of responsibility, and increase the interest and competitiveness of activities. Life Education (Military Camp Style, Autonomy, Normalization): The management elements of the military are introduced, strict requirements are imposed on dormitory internal affairs, creating a collective living environment with strict discipline. Students took on the responsibilities of the living area independently. They learnt to negotiate, divide work and cooperate, which effectively improves their independent living ability and sense of participation in public affairs.

2.3 Cultural Integration Strategy for Heart Infiltration

Cultural elements are deeply integrated into the labor process to deepen labor cognition and emotional experience. In the evenings, students are organized to learn and sing revolutionary historical songs and watch open-air movies. They experienced the spirit of self-reliance and hard work, and thus strengthened their recognition of the value of “labor creates a happy life”. During the labor breaks, they are organized to recite classic agricultural poems and carry out song medleys, which arouses their interest in agricultural culture. It could not only relieve the fatigue caused by physical labor, but also foster a sense of familiarity with and emotional identification with agricultural culture.

2.4 Diversified and Sustained Evaluation and Feedback System

(1) Process Recording (Labor Growth Handbook): The handbook records in detail students’ specific performance in mastering agricultural skills, team cooperation performance, safety awareness, and other aspects, as well as hierarchical or descriptive evaluations.

(2) Achievement Presentation (Closing Ceremony): At the closing ceremony, the effectiveness of the activity and the students’ performance are summarized. The excellent groups and individuals are commended. And student representatives are arranged to share practical experience and growth stories. All the students have strengthened positive incentives and peer education effects.

(3) Sustained Tracking (Home-School Co-Education): A home-school co-education evaluation form is designed to continuously track students’ behavioral changes after the activity, promoting the extension of labor habits to family and school life. It could ultimately form an education closed loop.

3 Multi-Department Coordination and Guarantee: Building a “Three-Dimensional Linkage” Practical Education Community

The smooth implementation of the activity highly depends on the in-depth coordination of the education sector, the agricultural sector, government departments and local forces, forming a solid guarantee network. During which, the school is the leader, focusing on the purposeful and planned imparting of labor knowledge, cultivation of labor ability, and the shaping of basic labor quality, reflecting the systematicness, standardization and institutionalization of labor education. The society is the support, focusing on the application of labor knowledge, career exploration and the exercise of service ability, and emphasizing the cultivation of labor values and dedication spirit, reflecting the service, creativity and workplace orientation of labor education (Hao & Hasi, 2020).

3.1 Education - Agriculture Departments: Professional Guidance and Resource Coordination

The School Affiliated to Beijing Normal University selected excellent subject teachers as class labor instructors. Together with head teachers, these instructors designed the curriculum, jointly developed featured resources, established a scientific evaluation index system for students' labor practice, and evaluated the effectiveness of the activity. As the general coordination and resource hub, Zhongguancun Pinggu Agricultural College supplied basic resources and the connection of courses. It carefully designed characteristic modules, coordinated and mobilized expert tutors to participate in the activity. The corporation ensured the teaching quality of the whole process and the realization of the activity goals.

3.2 Safety Protection: Full-Process Coverage and All-Round Guardian

The optimal exclusive driving route was planned, and reliable buses were arranged with whole-process GPS monitoring. Traffic police were deployed to direct traffic, and local police stations were instructed to increase security forces to strengthen patrols. All the effort is directed to ensure the safety of teachers and students. Experienced accompanying doctors, first-aid skills training, sufficient medical kits and medicines were equipped. Moreover, a linkage mechanism with hospitals was established to ensure a rapid response to sudden health problems. Before the activity, a comprehensive safety survey was conducted, emergency drills were organized, all bases were urged to strictly implement safety measures, and sufficient emergency materials were prepared to deal with sudden situations such as weather changes.

3.3 Local Resources: Full Support and Efficient Implementation

The town government mobilized relevant units in the jurisdiction to provide practice venues, and coordinated farmers to open traditional farm tool warehouses to enrich resources. The village's “two committees” selected personnel familiar with the situation to be on duty at the site, assisted in maintaining order, and promptly solved practical problems. The problems include venue use and equipment debugging, ensuring the smooth connection of all links and providing a solid guarantee for the activity. The organ service center, on the other hand, provided strong support in logistics and emergency material reserve.

4 Practical Effects

4.1 Comprehensive Improvement of Students' Core Literacy

Students successfully acquired the planned basic agricultural and life skills. Some of them could independently complete operations with high technical requirements. They performed well in team cooperation tasks, showing clear division of labor, effective communication and a sense of responsibility. Their teamwork spirit and sense of responsibility were significantly enhanced. Through such practice, students realized the hardship and greatness of labor. Their awareness of respecting labor and cherishing food was enhanced. Their labor habits and hard-working spirit were extended to family and campus life, and their labor values were deeply internalized.

4.2 Innovative Breakthrough in the Development Model of Resource Units

The implementation of this labor education has changed a single school subject into a diversified and open implementation path (Hao & Wang, 2020). The activity explored a new resource integration model of “government coordination + university scientific research support + leading enterprise bearing + cultural resource activation + educational application”, unleashing the advantages of various subjects. Twelve standardized and modular agricultural labor education course packages were developed, which are replicable and adaptable.

4.3 Replicable Experience of Collaborative Education Mechanism

Management Innovation: A clear and efficient operation mechanism of “school reservation - college assignment - base acceptance” has been formed, which improves the efficiency of resource connection and the standardization of activity organization. The annual reception capacity exceeds 10,000 person-times, laying a foundation for large-scale promotion (Shang, 2024).

Digital Empowerment: E-commerce live broadcasts were embedded in the practice and opened to parents, allowing parents to witness their children's growth in real time, publicizing the achievements of modern agriculture and labor education, realizing the win-win of educational benefits and potential economic benefits, and expanding the influence of the activity. At the same time, it allows students to feel the rapid changes of the country and the development and progress of science and technology in the process of labor. This process stimulated the students' national pride and patriotic feelings, and helped them increase their abilities, knowledge and insights.

5 Conclusion

The collaborative practice between The School and Affiliated Beijing Normal University and Zhongguancun Pinggu Agricultural College is a successful innovation that relies on regionally featured agricultural science and technology resources and deeply practices the concept of social classroom. By building a group of science and technology practice bases with distinct characteristics, it implemented a systematic school-based education system that relies on an efficient and collaborative guarantee network. The activity has upgraded traditional labor education into a comprehensive education process integrating scientific and technological exploration, cultural infiltration, character shaping and ability

improvement. It vividly interprets the profound connotation of “the integration of the five educations”, and effectively cultivates the precious character and profound feelings of respecting labor, being good at cooperation and daring to innovate among teenagers in the new era.

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