

与自然共成长：
用校园中的棉田打造自然学习基地

Growing With Nature:
School Cotton Field for Nature-Based Learning

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摘要

“校园中的半亩棉田”是由中国农业大学携手清华附中永丰学校小学部、中国农业大学附属实验小学等学校共同发起的参与式校园景观营造项目。为回应当今社会在大中小学开展“劳动教育”的需求，响应国家关于涉农高校加强“耕读教育”的指导要求，本项目聚焦低效利用的校园绿化用地，种植棉花代替常见的景观植物，以大学及小学师生为参与主体，打造校园棉田耕读教育场地，并借助棉田场地开展棉田农事、棉艺创作等活动，构建以农历年为周期的创新型耕读教育模式。项目旨在让学生亲身参与农耕劳作，感受自然的力量，在劳动中启发创新与探索精神；引导学生回归生活，在与土地的连接中思考万事万物的本源，懂得珍惜身边的一草一木；让校园景观中的一隅充分发挥其场所价值，丰富校园中的劳动教育场景，在耕作中实现中华传统耕读文化的传承。

关键词

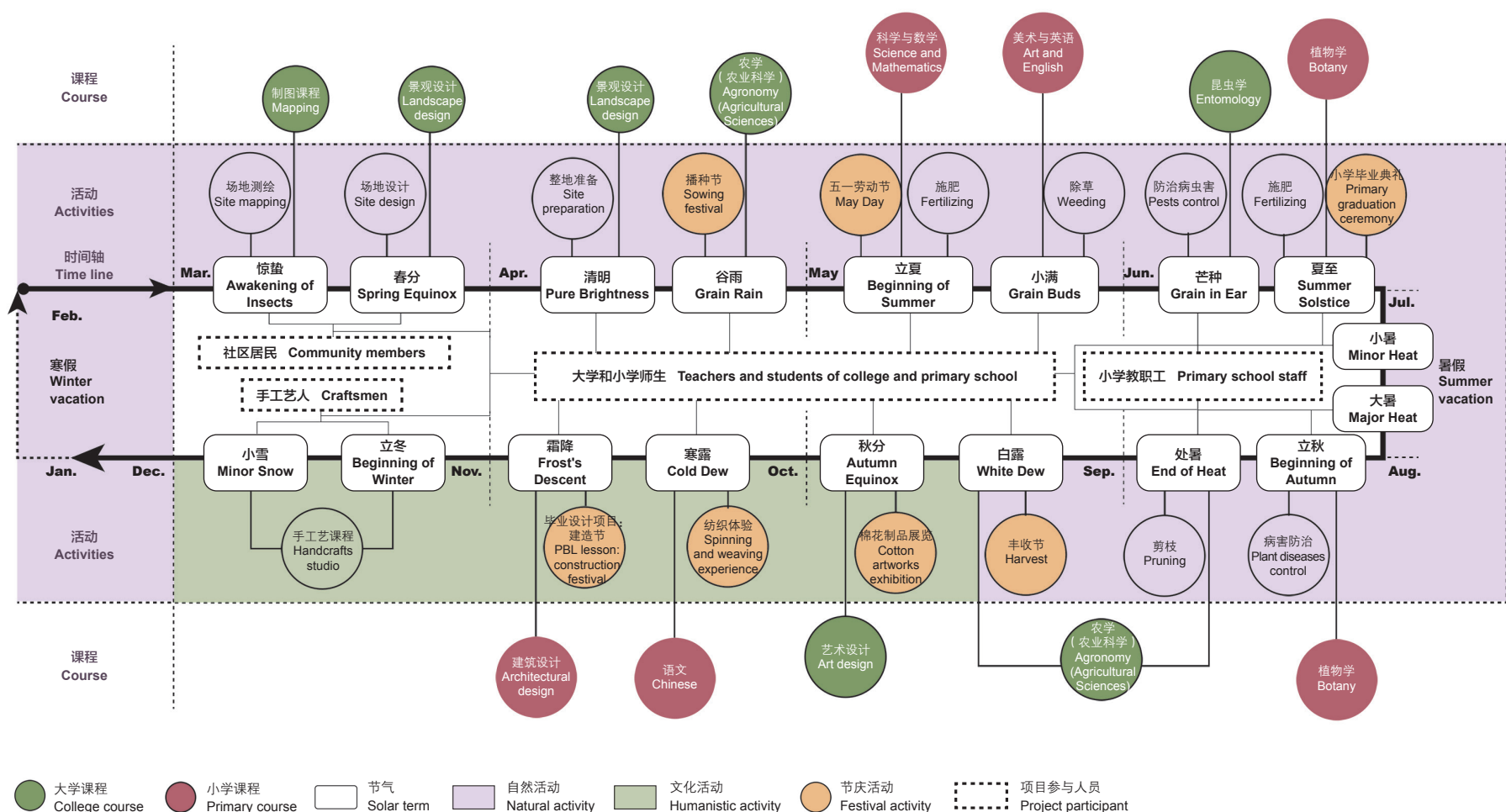
校园绿地景观；劳动教育；校园半亩棉田；自然；二十四节气

ABSTRACT

“School Cotton Field” is a participatory landscape design project jointly initiated by China Agricultural University, Primary School Division of Tsinghua University High School Yongfeng, Primary School Affiliated to China Agricultural University, and other schools. To meet the call for labor education in schools at all levels, as well as the national guidance on strengthening farming-reading education in agricultural colleges, this project proposes to plant cotton, rather than common landscape vegetation underutilized green spaces on campus to create a site for farming-reading education, involving teachers, students, and their parents. The School Cotton Field provides opportunities for activities such as farming and cotton artworks making, establishing an innovative model of farming-reading education based on the Chinese calendar. The project allows students to get inspired for innovation and exploration by farming, and to learn the deep connections between human and nature, as well as the value of living creatures on the land in daily life. It also takes full advantage of the campus landscape to enhance its role in providing labor education, thus to revive the traditional Chinese farming-reading culture on modern campus.

KEYWORDS

Campus Green Spaces; Labor Education; School Cotton Field Project; Nature; 24 Solar Terms



1. “校园中的半亩棉田”项目构架
1. The project framework of “School Cotton Field”

1 引言

自2020年3月中共中央国务院《关于全面加强新时代大中小学劳动教育的意见》发布以来，国家陆续发布了一系列政策文件，倡导加强大中小学劳动教育，要求将耕读文化融入校园文化建设及教学活动中，并指出学校应针对不同学段、类型学生的特点，以日常生活劳动、生产劳动和服务性劳动为主要内容开展劳动教育^[1]。学生不应仅学习书本中的知识，更要从土地与自然中汲取成长的力量；教育不应只满足“应试”的需求，更应引导学生理解土地、热爱自然、关注传统、珍惜生活并坚守理想。

校园中的绿化用地是校园开放空间中的重要组成部分，也是在城市中成长的学生日常接触自然、激发好奇心和求知欲的极佳场所^[2]。在中国北方城市

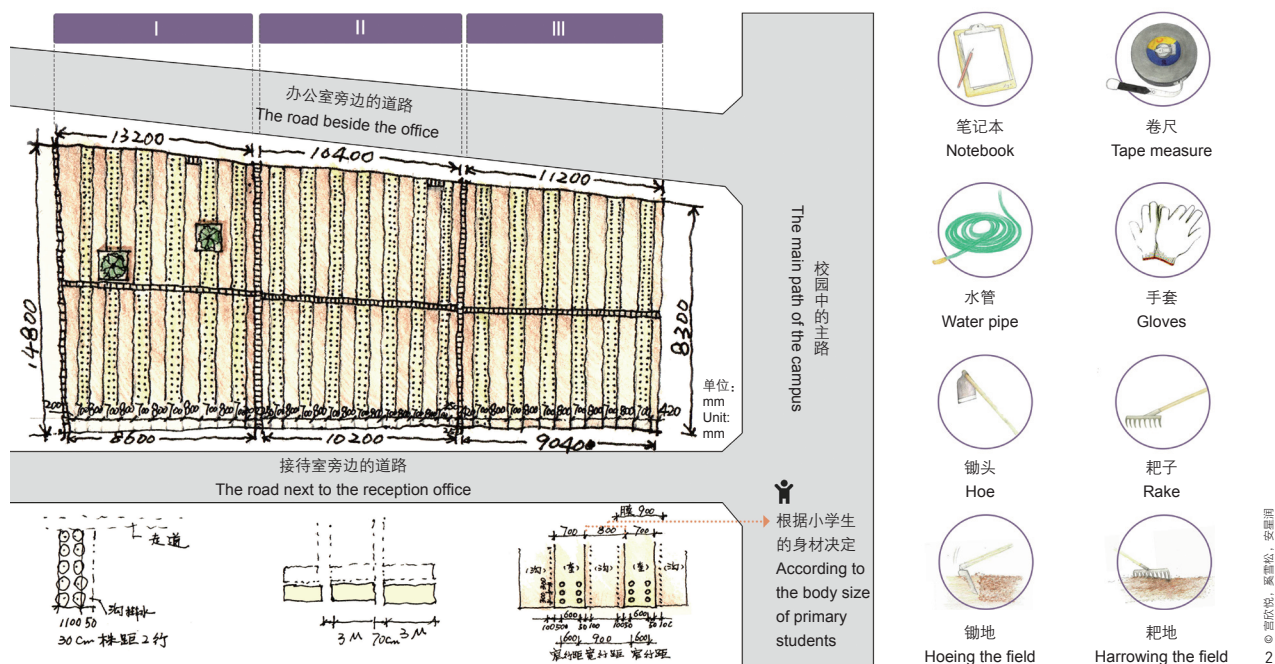
中，校园绿地中的景观植物多以常绿且易维护的乔木和灌木为主，辅以观赏性较强且成本较低的草本植物。为节约养护成本，这些绿地大多是不可进入的，或仅设置一些铺设用于通行的甬道，久而久之便成为校园中相对消极的空间，学生难以自发的将其与学习、游戏等活动相联系。于是，如何使校园绿地发挥更大的效益和价值，并将其打造为开展劳动教育和耕读教育的重要空间载体成为当今的重要命题。

2 探索源于土地与自然的成长之力

自2017年起，中国农业大学与清华附中永丰学校小学部、中国农业大学附属实验小学等多所小学共同发起了名为“校园中的半亩棉田”的参与式校园景观营造项目（图1），以此作为农科类大学响应

当今“劳动教育”命题开展的一项重要尝试。项目聚焦低效利用的校园绿化用地，通过种植棉花而非常见的景观植物，打造校园棉田耕读教育基地，充分发挥校园空间营造的劳动教育价值。在两校老师和农学专家的指导下，由小学和大学生共同全程主导场地规划与设计、播种、田间管理、采收等棉田生产过程（图2）。该项目不仅能让小学生们在校中体验到耕读劳作的乐趣，还为语文、数学、英语、美术等多个学科的教学创造了绝佳的户外教学场所，可辅助学生学习更多的自然与人文知识，激发学生的创新能力。

本项目以一个农历年为周期，依据二十四节气开展劳作活动，让学生从春分节气（3月）到白露节气（9月）完整体验棉花种植的各个生产环节，从秋分节气（9月）到霜降节气（10月）探索棉花作为重



要农作物的人文与艺术价值。日常田间管理活动内容依照难易程度分配给3~6年级的小学生，播种节和丰收节的活动则由全校师生共同参与。而风景园林、农学，以及农业建筑环境与能源工程等相关专业的大学生及教师利用自己的专业知识，指导小学生开展场地设计、植物认知、棉花艺术创作、建造实践等活动。除学校师生外，该项目也为学生家庭的参与提供了机会——学生父母可与孩子共同开展家庭种植活动，并通过线上社群与学校师生互动。棉田丰收后，大学生与小学生们以棉花为素材进行各种各样的创作，并举办棉创艺术节展示其作品；同时，一些艺术家和手工艺人也受到邀请，带领小学生们开展“织染缝绣”等纺织类手工体验活动。

“校园中的半亩棉田”项目从2017年延续至今，经历多次迭代，形成了“1个平台+2个劳动模块+N个课程实践内容+N个活动单元”的完整体系架构，架起了自然与人文、农业与文化、活动与课程、大学与小学之间的桥梁，塑造了特色校园文化环境。项目团队将上述经验与成果整理成为校本教材，以促进这一模式的推广。本文将以2017年在北京市清华附中永丰学校小学部进行的项目为例进行阐述。

3 自然体验——从一颗种子到一朵棉桃

清华附中永丰学校小学部校园的西南角有一块长约32m、宽约10m的半亩绿地，被作为开展此次校

园棉田景观营造活动的基地（图3）。3~9月是棉田劳作的关键时期，小学生们需要严格按照节气在场地内开展相应的农事劳动，以确保棉花植株的正常生长与收获。与此同时，一系列自然体验活动也拉开了序幕。

春分节气（3月）认识场地，测绘与方案设计工作就此展开。大学生与小學生相互配合，完成场地基本数据的采集工作，绘制场地现状平面图。在参考棉花大田种植经验确定起垄宽度后，学生们计算出起垄数量，按照得出的数据绘制平面设计方案，最终根据种植面积进行种子的采购。

清明节气（4月）整地起垄，学生被分为若干组，按照设计方案在场地内进行翻土、放线、起垄

2. 师生们一起进行场地测绘，依照小学生的身体尺寸确定棉田的起垄数量及起垄间距。
3. 棉田平面图
4. 清明节前后，两校师生及小学生家长一起进行整地，为播种做准备。
5. 谷雨播种节。对于大多数小学生来说，这是他们第一次见到棉花种子，并在大学生的引导下体验播种。
2. Teachers and students conducted site mapping together, and determined the number of ridges and interval width between them in the field according to primary students' body size.
3. Plan of the cotton field
4. Around Pure Brightness, teachers and students from university and primary school, together with parents of primary students, were preparing the land for sowing.
5. The Grain Rain Sowing Festival. For most primary students, it was the first time to observe cotton seeds and experience sowing with the help of college students.



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和全面浇水等基础工作（图4），为接下来的播种育苗做好准备。在此过程中，学生可以学习使用农作工具，了解评价土壤质量的基本方法。

谷雨节气（4月）种子下播，此时寒潮天气基本结束，气温快速回升，是棉花播种的最佳时节。谷雨当天，永丰学校小学部举办了播种节活动（图5），大学生为小学各个班级分配责任田和种子，并协助小学生们完成播种。在播种过程中，大学师生引导小学生们观察种子外观，了解有关种子的学问，并鼓励他们把种子带回家，邀请父母进行家庭种植。

立夏至夏至节气（5~6月）期间，棉田小课堂陆续开课。立夏是5月的第一个节气，此时白昼较长，天气炎热，棉花进入生长盛期，为多种校本课程提供了天然的教学材料，棉田也成了天然的课堂（图6）：数学课学习测量知识时，老师带领学生们来棉田里测量棉花的株高；语文课讲到诗歌，学生们就来到棉田，以棉花为题材进行文学创作；英语课上，学生可以棉花为创作素材制作英文手抄报并进行演讲；此外，还可以在科学课上观察并记录棉花的生长状况及虫害情况，在美术课上画棉花，在音乐课上为棉田写歌。全校师生都在潜移默化中与这片种植着棉花的土地结下了深厚的感情。在此期间，风景园林专业的大学生们在棉田中带小学生们了解棉花的形态结构和生物学特征，让他们更加了解棉这种“宝藏作物”。

小暑节气至处暑节气（7~8月）期间，随着棉花的生长，虫害逐渐出现，小学生们除了保证每周一次的浇水和除草外，也在大学生和农学专家的指导下学习如何辨认害虫并应对虫害问题（图7）。为了维持棉田的通风透光性、预防植株病变，并提



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高成桃比例，整枝、打顶等田间管理工作也陆续启动。在小学生放暑假期间，小学教职工们暂时接管棉田的浇水、除草等日常管理事务。

白露节气（9月）棉花吐絮。几个月的辛勤劳动换来累累硕果，小学生们兴奋地在田间穿梭，采摘吐絮的棉桃（图8）。对于大多数学生而言，这是他们人生中第一次见到从地里长出的棉花，而且还是自己的劳动成果！学校特意举办了一场丰收节活动，将学生们这半年来的学习与劳动成果以文艺汇演的方式进行了集中展示。

4 人文体验——从一朵棉桃到一件棉创作品

棉花丰收之后，学校开展了更加丰富多彩的人文体验活动，让学生们体验“从一朵棉桃到一件棉创作品的华丽转身”。学生们通过绘画、诗歌、手工等多种形式对棉花进行自由创作，充分调动感官体验，从颜色、触感和材质等方面提取棉花的特征，创作出了丰富多彩的艺术作品（图9）。此外，学生们还可借助简化的工具体验棉花去籽、纺线、染色、织布、缝绣等制作棉创作品的完整工序（图10），并在此过程中了解与棉花有关的传统文化、感受其魅力，从而形成对中华传统耕读文化传承与发展过程的认知。通过近距离、长时间的手工文化体验，师生们对传统文化产生了新的“领悟”——传统文化并不“落伍”，其中蕴含的生存智慧与生活美学反而能够延续至今。

到了10月的霜降节气，天气逐渐转凉，采收后的棉田里仍有大量待处理的棉秆，非常适合做学生们的建造材料——在以“废弃棉秆再利用”为主题的小学毕业实践项目中（图11），大学生指导小学

生们以废弃棉秆为主要材料，经过为期一个月的小组讨论、方案设计和建造，最终完成了五组建造作品，包括为流浪动物搭建的关怀小窝、为小鸟筑的鸟巢，以及为解决同学们日常需求而设计的商品贩卖机。这一项目让棉田里的材料都能物尽其用，也使小学生们认识到，这个世界没有“废料”，只有放错地方的“宝藏”，具有环境保护教育意义。

5 结语

“校园中的半亩棉田”项目至今已开展四年，已有三个城市的六所中小学参与到项目中，种植的作物品种也根据学校所在地的气候条件从棉花拓展至玉米、苕蓝等10余种，涉益人数约为6 000人。中国农业大学的学生们还成立了相关社团，以招募更多志愿者参与到项目实践中来。在后续的与中国农业大学附属小学的合作项目中，手工艺体验活动也被引入大学校园，以嘉年华的形式面向全校师生开展，小学生们被邀请到大学校园一同参与庆祝活动。小学生们创作的一系列棉花文化创意作品也通过竞赛形式被收集起来，在大学中进行了展览。

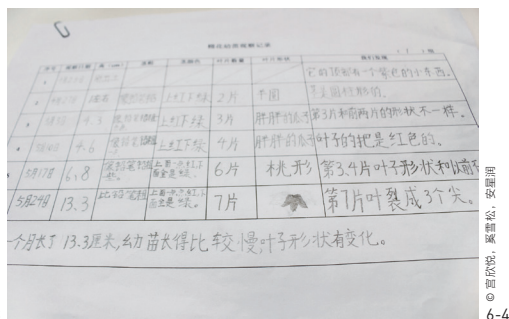
在为期近一年的项目过程中，小学校园里的半亩棉田充分发挥了景观的场所精神，将学校的课程教学与劳动实践紧密联系在一起，显著增加了学生的户外活动时间和与自然的亲密接触，也使他们对于环境的保护意识和对传统文化的了解进一步加深。小学生们在与棉花共同成长的过程中懂得了土地和自然的意义——田是真实的、和谐的，反映着千百年来人类与脚下土地的真实关系；棉是美丽的、温暖的，承载着人类生存智慧与中华非遗纺织技艺的美学价值。团队希望这一项目能在学生们的成长过程中留下独特的回忆，成为他们一生中最好的成长记忆之一。**LAF**

致谢

感谢清华附中永丰学校小学部杨莹校长及老师们、中国农业大学附属实验小学王晋主任等老师、中国农业大学华金平教授等老师，以及土布纺织技艺非遗项目代表性传承人郑芬兰老师对本项目的大力支持与指导帮助。

注释

本项目设计团队成员为宫欣悦、安星润、陈昕昕、路畅、梁诗繁、李安坦、王琳、邓泽宽、徐皎艺和鲁天云，指导教师为奚雪松。此项目荣获2021美国景观设计师协会学生组社区服务类荣誉奖。



6. 立夏节气，棉田为语文、数学、英语等校本课程提供了绝佳的室外教学场所。
6. Around Beginning of Summer, the cotton field provides an excellent outdoor classroom for school-based courses such as Chinese, Mathematics, and English.

1 Introduction

Since the release of State Council's Opinions on Strengthening Labor Education for Primary, Secondary, and Higher Education in the New Era in March 2020, China has issued a set of guidelines, suggesting that schools should integrate the farming-reading culture into campus culture construction and teaching activities, in the form of labor education, including daily housework, productive activities, and service labors, accordingly to students in different grades of primary, secondary, and higher education^[1]. Students are encouraged to acquire knowledge from nature, for comprehending land, enjoying life, and cherishing cultural traditions rather than exam-oriented education.

Green space is an important part of open spaces on campus, which is ideal for students growing up in cities to satisfy their curiosity to nature^[2]. However, such campus green spaces in northern Chinese cities are usually inaccessible

and unattractive to activities like learning and playing, with easily-maintained evergreen trees and bushes, low-cost ornamental herbs, and paths only for pedestrians. To transform such campus green spaces into places for supporting labor education and farming-reading culture can be an important way to improve the overall benefits and value.

2 Exploration on Power from Land and Nature

In 2017, School Cotton Field (Fig. 1), a participatory landscape design project was jointly initiated by China Agricultural University, Primary School Division of Tsinghua University High School Yongfeng, Primary School Affiliated to China Agricultural University, and other schools. As an experiment by the agricultural college to respond to the call for labor education, cotton was planted in the underutilized green spaces rather than common

landscape vegetation, to generate a base for farming-reading education on campus. Guided by teachers and agricultural experts, students from both the primary school and the university together went through the cotton production cycle, from site planning and design, sowing, field management to harvest (Fig. 2). The project has not only encouraged primary students to enjoy the farming-reading experience, but also created excellent outdoor places for multiple teaching classes such as Chinese, Mathematics, English, and Art, where students can acquire more knowledge of natural sciences and humanities with improved innovative capacity.

In a lunar year, the cotton production activities in this project are carried out according to the solar terms from Spring Equinox (in March) to White Dew (in September), while the harvested cotton are then used for cultural and artistic works from Autumn Equinox (in September) to Frost's Descent (in October). Tasks of daily field management are assigned to students in Grade 3 ~ 6 based on the degree of difficulty, while the sowing and harvesting festivals are attended by all teachers and students in the school and activities like site design, plant identification, cotton handicraft making, and related construction practices are conducted by primary students under the guidance of college students and teachers in Landscape Architecture, Agriculture, and Agricultural Building Environment and Energy Engineering. Besides, family planting activities are provided as public participation programs for parents to join in, who can further interact with teachers and students by establishing online communities. The handicrafts made of the harvested cotton are displayed in art exhibitions; meanwhile, some artists and craftsmen are invited to teach primary students with textile skills such as weaving, dyeing, sewing, and embroidery.

Since 2017, the project has developed a framework of “one platform, two labor modules, and a number of practical classes and



activity units,” helping bridge nature and human, agriculture and culture, practice and teaching, and colleges and primary schools, by establishing featured cultural landscape on campus. The experience and achievements have also been summarized as a teaching paradigm for a wider promotion. This article describes the project at Primary School Division of Tsinghua University High School Yongfeng, Beijing implemented in 2017.

3 Natural Experience—From Seed to Boll

The green space (about 32 meters long and 10 meters wide) located in the southwest corner of Primary School Division of Tsinghua University High School Yongfeng, was taken as the site for the construction of cotton field

(Fig. 3). During the time span of cotton growth (from March to September), the primary students should strictly follow solar terms to carry out relevant farming activities, which allowed them to experience nature education at the same time.

In Spring Equinox (in March), college and primary students collaboratively mapped the existing field for cotton planting, and designed the width of ridges and calculated the number of ridges. Finally, students drew the planting scheme and purchased seeds according to the planting area.

By Pure Brightness (in April), students were divided into several groups to plough, set, ridge, and water the field (Fig. 4) as a preparation for sowing. In this process, students could learn the way of using farming tools and basic methods of soil quality evaluation.

Grain Rain (April) is the best time to sow seeds when the cold weather ends and the temperature rises rapidly. On the day of Grain Rain, the primary school held sowing festival (Fig. 5), in which college students assigned plots and seeds to each class, and assisted primary students to sow. Primary students learned about the appearance and other knowledge of cotton seeds, and brought seeds home and planted them with their parents.

From Beginning of Summer to Summer Solstice (in May and June), with more sunlight and a hot weather, many classes were taught in the cotton field successively based on the materials produced by the fast-growing cotton (Fig. 6): In Mathematics Class, students learned measurement knowledge by measuring the height of cotton plants; in Chinese Class, they poetized cotton and farming; in English Class, they made handwritten brochures and gave speeches on cotton; also, they observed and recorded the cotton growth and pests in Science Class, drew pictures of cotton in Art Class, and wrote songs for the cotton field in Music Class. Teachers and students all became deeply attached to the cotton field imperceptibly. During this period, college students majored in Landscape Architecture taught primary students to learn the morphological and biological characteristics of cotton, enhancing

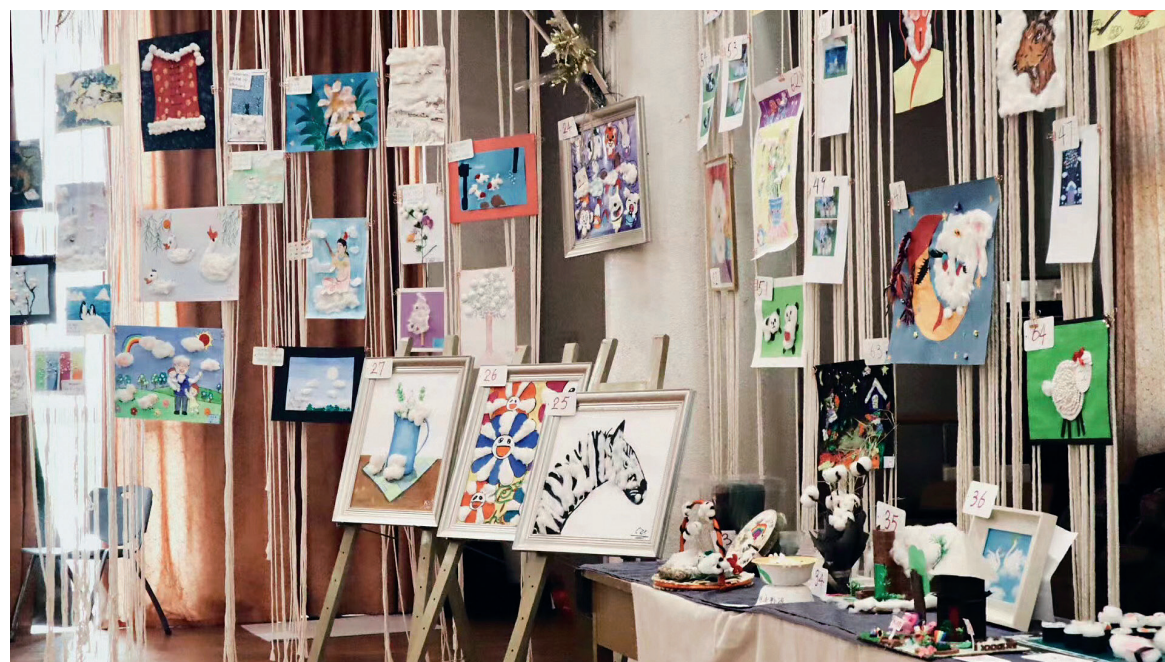
7. 芒种节气时，在大学生和农学专家的指导下，小学生们有序地开展浇水、除草、除虫等日常管理工作。

8. 白露节气，棉田迎来了大丰收。学生们兴奋地在田间穿梭，采摘棉花，并通过文艺汇演展示半年来的收获。

7. Around Grain in Ear, under the guidance of college students and agricultural experts, primary students carried out daily management such as watering, weeding, and pest control.

8. Around White Dew, the cotton field had a great harvest. Students excitedly picked cotton, and showed what they acquired over the past half year by art performances.

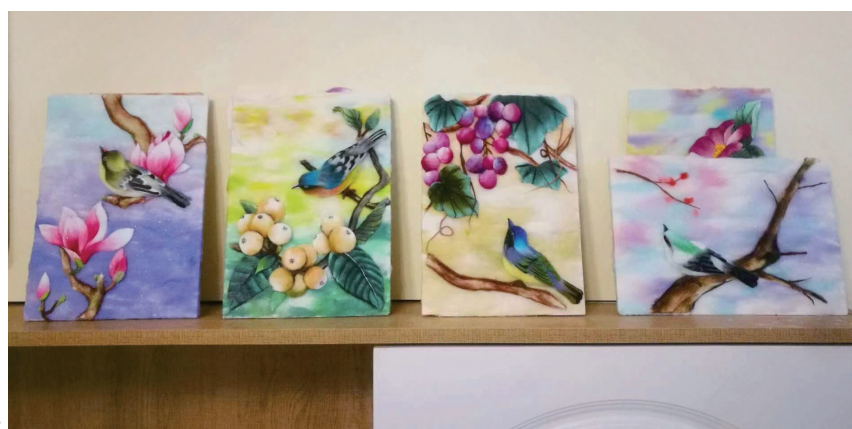




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9. 学生们制作出许多精美的棉花作品, 这些作品被收集起来在大学集中展览, 吸引了很多社区居民前来参观。
9. Cotton artworks made by students were collected and exhibited in the university and attracted many community residents.

their understanding of the value of cotton.

From Minor Heat to End of Heat (in July and August), as the pests on cotton increased, primary students also learned to identify and address such problems, guided by college students and agricultural experts, through maintenance such as weekly watering and weeding (Fig. 7). In this period, to ensure sunlight, prevent cotton diseases, and promote yield, trimming and top pruning were also required. During the summer vacation, the faculty of primary school were temporarily

responsible of daily watering and weeding.

Around White Dew (in September), the hard work in the past several months transformed into a great harvest, as well as the excitement and busyness of the primary students (Fig. 8). For most of them, this was the first time that they have seen cotton bolls, especially planted by themselves, grown in the field on their own school campus! The school particularly held a harvesting festival, at which students exhibited the outcomes of their study and labor by art performances.

4 Cultural Experience—From Cotton Boll to Artwork of Cotton

After the harvest of cotton, the school held diverse cultural experience activities for students, including artwork making. Students could create diverse types of artworks with cotton, such as painting, poetry, and handicrafts. Such creation requires them to perceive and extract features of cotton in terms of color, tactile feeling, and texture (Fig. 9). Besides, by simplified tools, students could also experience the entire process of creating a piece of cotton artwork, including deseeding, spinning, dyeing, weaving, sewing, and embroidery (Fig. 10), learning related traditional culture and enjoying the fun of hand-making, thus to understand the inheritance and development of traditional Chinese farming-reading culture. Such deep exposure to cotton handicraft inspired teachers and students that traditional culture does not relate to “outdated,” but long-lasting wisdom of survival and aesthetics of life.

By Frost’s Descent in October, the weather gradually turns cold, and a large number of cotton stalks are still left in the field, which can be used as building materials. In the graduation practice project of the primary school “How to Reuse the Cotton Stalks” (Fig. 11), after a month of group discussion, project design, and construction, five groups of works, including houses and nests for stray animals and birds, as well as vending machines to serve students, were finally built up with the waste cotton stalks. By such practice, students realized that all waste materials could be recycled and reutilized, which is of significance to environmental protection.

5 Conclusions

It has been four years since the initiation of School Cotton Field project, in which six primary and secondary schools in three cities have joined, involving about 6,000 people.



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The crops for planting decided by the climate conditions of each site have expanded to more than 10 species, including corn and woad. Students of China Agricultural University have also set up related organizations to recruit more volunteers. In the follow-up cooperation with the Primary School Affiliated to China Agricultural University, handicraft creation activities were also introduced to the university in form of carnival open to all teachers and students, as well as primary students, while their artworks made of cotton were also collected in a competition and exhibited in the university.

Lasting for nearly one year, each project gives full play to the spirit of place of landscapes. It helps connect regular teaching and learning closely with labor practice, significantly increasing the time of students on outdoor nature activities, thus having a deeper understanding of environmental protection

and traditional culture. While growing up with the cotton, primary students comprehend the connections between land and nature—the cotton field authentically and harmoniously reflects the real relationship between human and the land for thousands of years; the cotton is a symbol of beauty and warmth, containing human’s wisdom of survival and aesthetic value of traditional textile as an intangible cultural heritage of China. The team hopes that this project can leave a unique and wonderful memory for students in their lifetime. **LAF**

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NOTE

The members of the project team are Gong Xinyue, An Xingrun, Chen Xinxin, Lu Chang, Liang Shifan, Li Antan, Wang Lin, Deng Zekuan, Xu Jiaoyi, and Lu Tianyun, and the supervisor is Xi Xuesong. The project won the Award of Honor in Community Service Category of 2021 American Society of Landscape Architects Student Awards.

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10. 在非遗传传承人的指导下，学生们体验织染缝绣等传统手工技艺。
11. 丰收节过后，棉杆成为了棉田里的废弃物。小学生们用这些棉杆开启了“废弃棉杆再利用”毕业实践项目。
10. Taught by the inheritor of intangible culture heritage, students experienced traditional handicrafts such as weaving, dyeing, sewing, and embroidery.
11. After the harvesting festival, cotton stalks left in the field were used by the primary students in a graduation practice project “How to Reuse the Cotton Stalks.”