

# *Discussion on Base Construction of Field Professional Practice and Ecological Civilization Practice for Graduate Students of Resource and Environment Professional Degree*

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**Abstract:** The professional practice education for postgraduate students in the field of resource and environment is a crucial aspect of their academic journey and a fundamental means of cultivating accomplished applied specialists. As an important base for cultivating environmental protection talents, resource and environment majors in higher education institutions have the vital task of nurturing qualified environmental professionals, necessitating the strengthening of practical abilities in this field. Taking the base construction of field professional practice and ecological civilization for postgraduate students majored in resource and environment at Mianyang Normal University as an example, this study summarizes the teaching resources and experiences gained from the development of field practice education, focusing on both the cognitive practice and the ecological civilization. Moreover, it explores specific approaches to the construction of field practice bases, aiming to provide constructive thoughts and recommendations for the training of postgraduate students in resource and environment majors.

## 1. Introduction

Statistics indicate that China has cultivated over 7 million postgraduate students, solidifying its position as a renowned nation in postgraduate education. In 2022, the number of applicants for master's programs reached a staggering 4.57 million, marking an increase of 800,000 or a growth rate of 21% compared to 2021. Among them, 1.107 million students were enrolled[1]. With the flourishing development of postgraduate education, it has become a crucial objective to cultivate students with excellent professional and vocational qualities, practical innovation abilities, and strong analytical and problem-solving skills. In 2013, the Ministry of Education released the Opinions on Deepening the Reform of Postgraduate Education, which outlined certain requirements for the cultivation of full-time master's professional degree holders. These requirements include building a curriculum system that caters to the characteristics of professional degrees, reforming teaching

content and methods, enhancing case-based teaching, and exploring various forms of practical instruction[2]. Among these requirements, the establishment of postgraduate practice bases is regarded as an important measure to integrate theoretical and practical aspects of postgraduate education, as well as a key step in improving the postgraduate education system.

The utilization of off-campus practice bases for educational purposes has become one of the primary strategies in cultivating highly skilled and applied talents in the field of environmental studies [3]. Establishing an off-campus practice teaching system is an essential approach to ensure the effectiveness of practical content and meet the demands of talent development [4]. As a pilot institution for the “Service for National Special Needs Project”, Mianyang Normal University focuses on disciplinary construction goals. It further clarifies disciplinary layout, refines disciplinary orientations, improves disciplinary organization, establishes disciplinary teams, develops innovative disciplinary systems, actively innovates talent training modes and mechanisms, broadens channels for talent development, and explores the establishment and operation of off-campus practice bases for postgraduate students in the field of resources and environment. Conducting field practices has been a tradition for the School of Resource and Environmental Engineering at Mianyang Normal University ever since it started enrolling master's students. This practice serves the dual purpose of consolidating theoretical knowledge and broadening students' horizons. Taking into account the current status and experiences of the off-campus practice base at Mianyang Normal University, this paper will explore specific measures in terms of constructing specialized cognition practice bases and ecological civilization internship bases. It aims to provide guidance and valuable insights for the cultivation of postgraduate students in the major of resources and environment.

## **2. Significance and Content Arrangement of the Practice**

The objective of constructing field practice teaching bases is to foster innovative talents and enhance the quality and efficacy of practical education. Establishing a novel perspective on field practice teaching, characterized by teacher leadership and student-centered approaches, is crucial [5]. Field practice teaching is regarded as the most interactive form of education between teachers and students, where students' focus and classroom outcomes are maximized [6].

### **2.1. Theme and Content Arrangement of the Practice**

#### **(1) Practice theme**

After half a semester of studying foundational and specialized courses, a 7-day field exploration and practical learning will be conducted in the field from October to mid-November each year. The specialized cognition practice theme is focused on the protection and restoration process of the fragile ecosystem in the mountainous region surrounding the Sichuan Basin. The ecological civilization internship theme encompasses experiences related to the spirit of “gratitude and progress”, paying respects to great figures, immersing in the spirit of the Red Army, and celebrating the spirit of contributions made in the field of nuclear weapons.

#### **(2) Arrangement of practice process**

In order for students to have a comprehensive understanding of the local resources, it is crucial to plan the practice time and content effectively. The proposed internship duration is one week. After conducting specific practical investigations, the author believes that it is reasonable to interweave the practical content. Table 1 illustrates the practice arrangements in recent years, serving as an example to showcase different designs for practical content.

Table 1: The arrangement of practice process.

No	Schedule	Content
1	Day 1	Explore the exhibition venues in Zitong County, the “City of Two Bombs”, to embrace and perpetuate the essence of profound patriotism, selfless devotion, indomitable spirit, diligent labor, and the audacity to conquer heights.
2	Day 2	Immerse in the rich Qiang ethnic culture in Jiuhuangshan
3	Day 3	Conduct landscape planning surveys in Qingxi Ancient Town and conduct comprehensive biodiversity surveys in Tangjiahe National Nature Reserve.
4	Day 4	Witness the resolute spirit of earthquake resistance and disaster relief at the Qingchuan Earthquake Site Park and observe the awe-inspiring geological wonders of the Longmen Mountain in the Jiannenguan National Geopark.
5	Day 5	Engage in hydrological monitoring and immerse in Nanhe National Wetland Park while also studying the magnificent peak-cluster landforms at the Micang Mountain Grand Canyon.
6	Day 6	Enrich the students’ understanding of patriotism through exploring the historical remnants of Wangcang County.
7	Day 7	Pay homage to the exceptional leader by visiting Deng Xiaoping’s former residence and honor the enduring legacy he left behind.

## 2.2. Objectives and Significance of the Practice

### (1) The significance of conducting professional cognitive practice

By helping students establish a practical connection between theoretical knowledge and real-world applications, they are able to mutually validate and enhance their understanding of relevant theories while recognizing the compositional characteristics of various natural geographical environments, such as geology, landforms, soils, and vegetation.

Through the cognitive understanding, grasp, and exploration of the formation and developmental patterns of natural geographical phenomena, students can elevate their analytical and problem-solving abilities.

This practice also initiates students’ understanding of fieldwork methodologies and provides an initial acquaintance with the professional skills required for future masters of resources and environments. It lays the foundation for applying and transforming professional knowledge and skills to address real-world problems.

### (2) The significance of conducting ecological civilization internships

By paying respects to great leaders and expressing reverence towards them, students can gain insight into the heroic journey of the Red Army and pay homage to revolutionary martyrs. They also learn from the spirit of contribution demonstrated by China’s older generation of intellectuals.

Through close engagement with the earthquake-stricken areas, revisiting the touching details of earthquake relief and post-disaster reconstruction, students can deeply experience the spirit of earthquake relief efforts and strengthen their sense of social responsibility.

Through outdoor professional practice, students expand their horizons and cultivate their sentiments. They develop a scientific research attitude, perseverance in the face of hardships, strict adherence to organizational discipline, and the ability to work collaboratively. Simultaneously, their love for the beautiful natural environment of our homeland is ignited, raising their awareness of environmental conservation. This contributes to the achievement of a harmonious relationship between human beings and nature, as well as the construction of a harmonious society.

### 3. Preliminary Study on Construction of Practice Bases

The selection of locations for field practice bases is a critical prerequisite for the success of practical learning experiences, as it ensures the harmonious coexistence between base construction and environmental protection by taking into consideration the natural environmental conditions and ecological resources through environmental assessments. Appropriate site selection and environmental assessments are among the key factors for the establishment of professional cognitive practice and ecological civilization internship bases[7]. The selection of these bases should fully consider the distinctive features of both the natural environment and cultural significance, including factors such as topography, soil, water sources, and the spirit of patriotism, ensuring that the bases possess suitable conditions for practical learning experiences[8]. After comprehensive investigations, the strengths and characteristics of different practice bases should be outlined, followed by a comprehensive summary of the importance and significance of constructing different practice bases for postgraduate education.

#### 3.1. Professional Cognitive Practice Bases

Through comprehensive practical investigations, the selected field practice bases include Jianmen National Geopark in Guangyuan, Sichuan Province, Micang Mountain National Nature Reserve in Wangcang County, Sichuan Province for geological and landform practices, Tangjiahe National Nature Reserve in Sichuan Province for plant diversity practices, Nanhe National Wetland Park in Guangyuan City for hydrological practices, Qingxi Ancient Town for landscape planning practices, and Tangjiahe National Nature Reserve in Sichuan Province for animal ecology practices[9]. The detailed information regarding professional cognitive practice bases and their corresponding practical contents can be found in Table 2.

Table 2: The name of professional cognitive practice bases and their practical contents.

No.	Name of professional practice base	Contents
1	Jianmen National Geopark, Jiange County, Sichuan	Geological and landform observations in Longmen Mountain
2	Micangshan National Nature Reserve	Observation of peak cluster landforms in the Grand Canyon
3	Tangjiahe National Nature Reserve	Observation of animals and plants
4	Nanhe National Wetland Park	Hydrological observations
5	Qingxi Ancient Town	Landscape planning

#### 3.2. Ecological Civilization Internship Bases

Table 3: The name of ecological civilization practice bases and their practical contents.

NO.	Name of Ecological civilization Practice bases	Contents
1	Donghekou Earthquake Site Park in Qingchuan	The spirit of earthquake resistance and disaster relief
2	The “City of Two Bombs” in Zitong County, Mianyang City	Understanding the spirits of the “Two Bombs” and the three-front construction
3	Deng Xiaoping’s former residence in Guang’an City	Paying tribute to the great leader and gaining insights
4	Jiuhuangshan Scenic Area in Beichuan Qiang Autonomous County	Experiencing the outstanding culture of ethnic minorities
5	The Red Army City in Wangcang County	Patriotic education

After comprehensive research and assessment, the selected locations for the internship bases

include the “City of Two Bombs” in Zitong County, Mianyang City, Sichuan Province, as the internship base for the spirit of the Two Bombs, One Satellite, and the three-front construction, Qingchuan Earthquake Site Park, as the internship base for the spirit of earthquake resistance and disaster relief, Deng Xiaoping’s former residence in Guang’an City, as the internship base for the legacy of a great leader, Jiuhuangshan Scenic Area in Beichuan Qiang Autonomous County, Mianyang City, Sichuan Province, as the internship base for the excellence of ethnic culture, and the Red Army City in Wangcang County, Guangyuan City, Sichuan Province, as the internship base for patriotic education. The specific names of the bases and their corresponding practice themes are detailed in Table 3.

## **4. Measures for the Construction of Field Practice Teaching Bases**

### **4.1. Improving the Selection and Evaluation Mechanism for Tutors**

The scientific literacy, academic achievements, and guidance effectiveness of mentors directly impact the quality of postgraduate education. Therefore, the selection mechanism for mentors is an important guarantee for cultivating high-quality postgraduate students[10]. It also serves to regulate the behavior of mentors, both from within and outside the university, ensuring that their guidance of postgraduate students does not remain superficial or lack active participation. Therefore, in the appointment and management of mentors, the following aspects can be considered: (1) Implementation of a two-level evaluation system for mentors. The university will establish a leadership group for mentor evaluation, which will consist of leaders responsible for postgraduate education, the human resources department, the postgraduate school, the research department, and other relevant departments. This group will be responsible for organizing, coordinating, and reviewing mentor evaluations throughout the university. (2) Mentor evaluations will be conducted annually, organized by the postgraduate school and implemented by the respective training units. (3) Evaluation results will be classified into two levels: qualified and unqualified. Mentors who are evaluated as unqualified will be prohibited from recruiting postgraduate students in the following year. (4) Mentors who have engaged in serious ethical misconduct or whose guided dissertations have accumulated two instances of “problematic dissertations” during the evaluation period will have their mentorship qualifications revoked.

### **4.2. Strengthening the Evaluation of the Quality of Practice Bases Construction**

The assessment of the quality of practice base construction for cultivating applied talents will be implemented through a two-level evaluation system at both the university and college levels. The self-evaluation of colleges will be organized by the academic affairs office once a year, with the participation of major heads, collaborative enterprise representatives, students, and supervising teachers. Based on the self-evaluation, colleges will select outstanding bases with excellent collaborative outcomes in production, academia, research, and application to apply for the university-level practice teaching demonstration base. The university-level evaluation, organized by the academic affairs department, will take place every three years. Building upon the college self-evaluation, a team of 5 to 7 experts will conduct on-site inspections, listen to reports, and review archival materials to assess the quality of the university-level practice teaching demonstration bases. Bases that achieve outstanding results will be recommended as provincial-level demonstration bases for cultivating applied talents. The assessment of the quality of practice bases construction will be carried out using the aforementioned quality assurance and monitoring system. In case of unsatisfactory evaluation results, cooperation agreements will be terminated.

### 4.3. Increasing Investment in Base Construction

To ensure the smooth implementation of field practice teaching, it is necessary to increase the investment in base construction. Funds can be raised through increasing special funds, introducing social capital, and engaging in collaborations. These funds can be used to purchase reagents, equipment, and instruments for the establishment of field practice teaching bases. Additionally, they can also be utilized for the maintenance and upgrading of existing facilities to ensure the normal operation of the bases. The establishment of an innovation fund program will encourage practice bases and postgraduate students to apply for various research projects, connecting them with the research resources of the bases and providing students with more diverse research opportunities.

### 4.4. Strengthening Exploration of Off-Campus Professional Practice Teaching Models

In terms of teaching methods, it is necessary to break through the conventional model of off-campus internships at the undergraduate level, where instructors follow a fixed route for explanation while students merely take notes and transcribe. Therefore, in the process of case-based teaching, instructors should widely employ heuristic, participatory, and inquiry-based teaching strategies and methods. Discussion sessions can be organized to guide students in utilizing their acquired knowledge to solve scientific problems through a series of practical activities. Additionally, while fostering postgraduate students, it is possible to integrate undergraduate teaching with postgraduate teaching to further enhance the quality and coverage of undergraduate education, cultivating comprehensive talents for the new era and optimizing educational resources. Lastly, collaboration with primary and secondary schools at all levels can be established to promote science popularization education. By utilizing field practice bases and laboratory platforms, we can nurture scientific thinking and a spirit of exploration among a large number of students, stimulating their interest in scientific research.

## 5. Conclusions

The importance of fostering high-quality professionals in the resource and environment major lies in the establishment of field professional practice and ecological civilization internship bases. Through field practice, the integration of theoretical knowledge with practical situations can be achieved, allowing for a deeper understanding and appreciation of nature. The harmonious coexistence between humans and the environment can be comprehended through professional practice, thereby nurturing awareness and love for nature, biodiversity conservation, and enhancing theoretical understanding of the environment and sustainable utilization of natural resources. Unlike school life, field practice demands the traversing of mountains and waters, experiencing hardships, and living in the open, posing a challenge to contemporary students.

However, it is also a valuable opportunity for the cultivation of students' endurance, adaptability, and teamwork. During the practical teaching process, instructors serve as role models, with their personal knowledge, cultivation, and character subtly impacting students, deepening their understanding of the environmental major and future development prospects, while guiding them to excel academically and improve their overall qualities. With agile thinking and a quick acceptance of new ideas in the new era, coupled with ample field practice experience, students can elevate their level of thinking and make even more significant contributions to the advancement of the ecological and environmental conservation cause. Therefore, by strengthening the construction of these bases and improving the quality and outcomes of practical teaching, robust support will be provided for the cultivation of postgraduate students in the resource and environment discipline.



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