

Cultivating the Competency of ‘Data Analysis + Policy Planning’ in Social Policy Programs: A Study under the New Liberal Arts Framework

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Abstract: This study examines the significance and urgency of cultivating “data analysis + policy planning” competencies in university social policy programs within the context of New Liberal Arts development. Through an analysis of current talent cultivation practices in social policy education, it identifies shortcomings in traditional training models with regard to data literacy and practical policy planning capabilities. The paper proposes systematic cultivation strategies encompassing curriculum restructuring, instructional content innovation, pedagogical method advancement, faculty development, and practical platform establishment. These measures aim to build a multidisciplinary social policy talent development system aligned with contemporary demands, providing actionable insights for educational reform in social policy disciplines.

1. Introduction

With the rapid advancement of information technology and the increasing complexity of social issues, the development of New Liberal Arts has become a key direction in higher education reform. Emphasizing interdisciplinary integration, technological empowerment, and real-world relevance, this approach aims to cultivate high-caliber professionals with cross-disciplinary perspectives, innovative capabilities, and practical problem-solving skills. Social policy studies—a discipline dedicated to addressing social challenges and promoting equity through policy formulation and implementation—requires practitioners to possess not only solid theoretical foundations but also robust data analysis skills and precise policy planning capabilities. Traditional social science research methods, which rely on established theories and models, are increasingly inadequate for navigating complex digital social systems, necessitating innovative research methodologies^[1]. Consequently, enhancing data analysis competencies among social policy students to meet future societal demands has emerged as a critical challenge requiring urgent attention.

2. New Requirements for Talent Cultivation in Social Policy Majors under the New Liberal Arts Framework

2.1. Interdisciplinary Knowledge Integration Capability

The New Liberal Arts breaks down traditional disciplinary boundaries, requiring students to develop interdisciplinary knowledge structures and thinking patterns. Social policy studies encompass multiple academic fields, including sociology, economics, political science, law, and management. Students must integrate knowledge from these disciplines to comprehensively understand the causes and impacts of social issues, thereby establishing a solid theoretical foundation for policy planning^[2]. Therefore, interdisciplinary collaborative training models are essential for cultivating data processing professionals—such as data entry specialists, system architects, big data engineers, data annotators, and large model engineers—focusing on critical processes including data collection, data cleaning, multimodal data processing, data visualization, and interaction. For instance, when investigating poverty issues, it is necessary to apply economic theories of income distribution, sociological perspectives on social stratification, and political science frameworks of power structures. This multidimensional approach enables a comprehensive analysis of poverty's root causes and consequences, ultimately facilitating the development of effective poverty alleviation policies.

2.2. Policy Planning and Evaluation Capacity

Policy planning involves designing policy frameworks or problem-solving solutions that are politically acceptable, administratively implementable, and technically actionable^[3]. As a core competency in social policy studies, policy planning requires students to master policy formulation processes and methodologies. They should develop rational and feasible policy proposals by analyzing current social issues, evolving trends, and data insights. Equally crucial is the ability to evaluate policies—monitoring implementation outcomes, identifying challenges promptly, and proposing improvement measures. For instance, when formulating employment policies, policymakers must consider labor market dynamics, corporate hiring needs, and job seekers' skill profiles to design targeted interventions. Policy effectiveness should then be assessed through longitudinal tracking surveys and data analysis.

2.3. Innovative Thinking and Practical Competence

The New Liberal Arts emphasizes cultivating students' innovative thinking and practical competence. Higher education administrators and frontline educators have conducted extensive discussions and practices aimed at enhancing students' practical abilities and innovation capabilities, achieving certain results^[4]. However, students' lack of innovative drive and scientific thinking severely limits the development of these competencies. Students majoring in social policy should boldly break free from traditional mindsets and actively explore new policy concepts and methodologies. Through practical application, they can integrate acquired knowledge into real-world problem-solving, accumulate hands-on experience, and improve their overall professional competence. For instance, participation in community service programs and government internships enables students to hone communication, coordination, and organizational skills, better preparing them for future career development.

3. Existing Issues in the Training of Social Policy Professional Courses

3.1. Issues in Curriculum System Design

Currently, only three universities in China offer undergraduate programs in social policy: China Agricultural University, Dalian Ocean University, and East China University of Political Science and Law. The curriculum for social policy programs is largely modeled after disciplines such as sociology and social work. While China Agricultural University pioneered this approach, the other two institutions have primarily followed its blueprint. However, the course systems remain relatively limited, with many courses existing on paper but not effectively implemented due to faculty members' lack of expertise. In the field of data analysis, available courses are scarce, predominantly focusing on statistical analysis techniques, while spatial data analysis from the natural sciences remains absent from the curriculum. Policy planning courses often emphasize theoretical instruction without integration with practical cases. This curriculum framework—derived from sociology and social work disciplines—fails to cultivate students' systematic knowledge structures and comprehensive application capabilities in social policy.

3.2. Teaching Content Fails to Meet the Requirements of New Liberal Arts

Many courses are derived from traditional curricula in sociology and social work, resulting in slow content updates that fail to meet the demands of social policy education. Particularly in data analysis, instruction remains limited to basic statistical methods and rudimentary data processing, with scant coverage of cutting-edge topics such as big data analytics and data mining algorithms. In terms of policy planning, while emerging social issues have gained attention, instructors often struggle to identify key priorities due to insufficient practical experience, frequently falling short in delivering effective instruction.

3.3. Teaching Methods Fail to Engage Students

Current curriculum structures still predominantly rely on traditional lecture-based teaching methods, leaving students in a passive learning state. Taking a marine science university as an example, there is a severe shortage of modern smart classrooms, with most teaching spaces remaining conventional teacher-student setups that lack peer interaction. During project discussions, group collaboration formats prove challenging to implement. This monolithic teaching approach struggles to engage students in policy design courses that require intellectual exchange and dynamic discussion, failing to stimulate learning motivation or effectively cultivate innovative thinking and practical competence. Consequently, teaching methods such as case studies and group discussions often become mere formalities in practice, failing to fulfill their intended educational purposes.

3.4. Imbalanced Faculty Structure

The faculty of social policy programs predominantly comes from disciplines such as sociology or social work, with a strong emphasis on the humanities. There is a notable shortage of educators possessing interdisciplinary knowledge and practical experience. This situation makes it challenging to achieve deep integration of interdisciplinary knowledge in teaching, failing to meet the requirements for cultivating students' interdisciplinary competencies under the New Liberal Arts framework. Additionally, some faculty members need to enhance their data analysis skills and practical experience in policy planning.

3.5. Weakness in Practical Teaching Components

To cultivate innovative talents in liberal arts education, universities must accelerate the development of innovative educational environments, establish specialized training bases conducive to talent development, and organically integrate teaching with extracurricular practical activities. A significant portion of practical training components should be incorporated into curriculum design^[5]. Practical teaching serves as a crucial pathway for developing students' hands-on skills and innovative capabilities. For social policy majors, practical instruction requires simulated policy-making scenarios. While China's education system primarily relies on field research-based practical courses that help students "connect with real-world contexts," policy formulation involves both rural and urban areas, particularly industrial development. These scenarios demand broader internship opportunities, yet current infrastructure struggles to support such programs. Student participation in actual policy-making processes remains limited, often confined to passive observation.

4. Strategies for Cultivating Competencies in Data Analysis and Policy Planning

4.1. Curriculum System Restructuring and Interdisciplinary Integration

A modular course cluster structured around "Fundamental Knowledge–Data Analysis–Policy Planning–Practical Application" will be developed. Core courses such as "Sociological Research Methods" will emphasize theoretical foundations, while specialized courses such as "Data Analysis and Mining" (featuring tools including Python and ArcGIS) will be introduced to enhance data analysis competencies. Case studies in data analysis will be integrated into courses including "Social Policy Planning and Implementation" and "Social Policy Analysis and Evaluation," culminating in comprehensive practical exercises through hands-on training modules.

4.2. Updating Teaching Content to Keep Pace with the Times

In the course "Social Policy Planning and Implementation," Geographic Information System (GIS) spatial analysis methods can be integrated to address the practical needs of effectively connecting poverty alleviation efforts with rural revitalization in China. This approach enables students to analyze the spatial distribution characteristics of impoverished populations in a specific county and their relationship with accessibility to healthcare and educational resources, thereby facilitating the design of more targeted assistance policies.

4.3. Innovative Teaching Methods to Stimulate Student Initiative

4.3.1. Flipped Classroom Teaching

The traditional classroom time allocation should be restructured. Students should preview lessons by watching instructional videos and reviewing materials through online learning platforms before class, while in-class time should focus on discussions, Q&A sessions, and clarifying doubts. Teachers can provide targeted guidance based on students' preparation progress to deepen their understanding of key concepts. The flipped classroom model enhances students' self-directed learning capabilities and classroom engagement, while fostering interactive communication between teachers and students.

4.3.2. Utilization of Virtual Simulation Experiment Platform

Through virtual simulation platforms, students can simulate real-world policy-making and implementation environments for hands-on practice. For instance, by developing a virtual urban management system, learners can assume various roles (such as mayors, department directors, and staff members) to participate in policy formulation and execution processes covering urban planning, public service provision, and emergency management. These virtual simulations allow students to test different decision-making approaches in a secure environment, observe outcomes, and make timely adjustments, thereby enhancing their practical skills and decision-making capabilities.

4.4. Establishment of a Practice Platform for School-Enterprise Cooperation

4.4.1. Establishment of Stable Internship Bases

Long-term and stable partnerships should be established with government agencies, social organizations, and enterprises to create a network of high-quality internship bases. Students should be provided with more internship opportunities and job options, enabling them to hone their practical competence in real-world work environments. Meanwhile, management and guidance throughout the internship process should be strengthened to ensure quality outcomes.

4.4.2. Implementing Industry-Academia-Research Collaboration Projects

Collaboration with enterprises and research institutions should be established to carry out industry-academia-research joint projects, including joint research topics and technological development. Students should be encouraged to participate in project research to enhance their scientific research capabilities and innovative competence through practical experience. Through the implementation of industry-academia-research collaboration projects, in-depth cooperation between universities and enterprises can be promoted, achieving resource sharing and complementary advantages.

4.4.3. Hosting Academic Competitions and Innovation and Entrepreneurship Competitions

We actively organize students to participate in various academic competitions and innovation contests, such as the National College Student Social Survey Competition and the "Internet+" College Student Innovation and Entrepreneurship Competition. These events serve to stimulate students' innovative thinking and competitive spirit while enhancing their practical skills and overall competencies. Additionally, they provide a platform for students to showcase their talents, which helps attract more corporate attention and support for the school's talent development initiatives.

5. Implementation Pathway for Competency Development in Data Analysis and Policy Planning

5.1. Foundation Building (First and Second Years)

5.1.1. Offering Pilot Courses

The course "Introduction to New Liberal Arts" is offered in the first year of undergraduate studies to introduce students to the concepts, connotations, and development trends of the New Liberal Arts, guiding them to cultivate interdisciplinary thinking. Concurrently, foundational

courses such as “Fundamentals of Computer Science” and “Advanced Mathematics” are provided to lay a solid foundation for subsequent learning.

5.1.2. Strengthening Foundational Data Analysis Training

During the sophomore year, we prioritize strengthening foundational data analysis courses such as "Principles of Statistics" and "Social Surveys and Data Collection." Through a combination of lectures, hands-on experiments, and practical assignments, students will master essential skills in data collection, organization, description, and preliminary analysis. Additionally, courses like "SPSS Software Applications" and "Advanced Excel Applications" are offered to equip students with proficiency in using mainstream data analysis software for data processing and basic analytical tasks.

5.1.3. Integrating Policy Planning Concepts

The concepts and methodologies of policy planning should be integrated into relevant professional courses. For instance, courses such as “Introduction to Sociology” could incorporate policy case studies for analysis, enabling students to gain a preliminary understanding of the fundamental processes and approaches in policy planning.

5.2. Competency Enhancement (Third Year)

5.2.1. In-Depth Study of Data Analysis Techniques

During the third year of undergraduate studies, courses such as “Data Analysis and Mining” and “Geographic Information Systems” should be offered to provide in-depth learning of big data analysis techniques and data mining algorithms. Through practical case studies and project-based learning, students can acquire the skills to utilize advanced technologies and tools for complex data processing and analysis. Additionally, students should be encouraged to take relevant certification exams, such as the National Computer Rank Examination, to validate their academic achievements.

5.2.2. Systematic Study of Policy Planning Courses

The program should offer core courses including “Introduction to Social Policy,” “Social Policy Analysis and Evaluation,” and “Public Administration,” providing systematic training in policy planning theories and methodologies. Through classroom lectures, group discussions, case studies, and simulation exercises, students can gain a comprehensive understanding of policy formulation processes and key components, while mastering policy design techniques and evaluation methodologies. Additionally, government officials and academic experts should be invited to deliver lectures on campus, sharing their practical experience and cutting-edge developments in the field.

5.2.3. Implementation of Comprehensive Practical Projects

Students should be organized to undertake comprehensive practical projects, such as social surveys and policy analysis reports. Students are required to apply their acquired knowledge in data analysis and policy planning to conduct in-depth research on specific social issues and propose corresponding policy recommendations. Through these practical projects, students can enhance their comprehensive application skills and ability to solve real-world problems.

5.3. Practical Deepening (Senior Year)

5.3.1. Integration of On-the-Job Internship and Graduation Project

During their senior year, students should be required to complete a six-month or longer on-the-job internship to develop practical competence through real-world work experience. Internship opportunities may include government agencies, social organizations, enterprises, and other entities related to social policy. Students should also be required to integrate their internship experiences into a graduation project (thesis), with topics closely aligned to the actual needs or current issues at their internship sites. This integrated approach of on-the-job training and graduation projects enables students to apply classroom knowledge to real-world scenarios, allowing them to test and refine their skills through practical implementation.

5.3.2. Continuous Tracking and Feedback for Improvement

A graduate tracking survey mechanism should be established to regularly monitor graduates' job performance and career development. Employer evaluations and feedback on graduates should be collected to facilitate timely adjustments to teaching content and methods. Simultaneously, graduates should be encouraged to pursue further education or participate in vocational training to continuously enhance their capabilities and competencies.

6. Conclusions

Under the New Liberal Arts framework, social policy programs face unprecedented opportunities and challenges. Cultivating students' "data analysis + policy planning" competencies has become an essential choice to meet modern demands and a key factor in enhancing talent development quality. Through measures such as restructuring curricula, updating teaching content, innovating instructional methods, strengthening faculty development, and establishing practical platforms, we can effectively improve students' analytical and policy-making capabilities, thereby producing more high-quality interdisciplinary professionals for society. However, educational reform remains a long-term systematic endeavor requiring continuous exploration and refinement. In future teaching practices, we will closely monitor developments in New Liberal Arts education, align with societal needs, deepen pedagogical innovations, and strive to create new paradigms in social policy talent cultivation.

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References

- [1] Xu, A., Xu, H. and Chen, C. (2025) *Talent Cultivation in Computational Social Sciences: Connotation, Dilemmas and Approaches*. *Science and Technology Think Tank*, 1, 71-76.
- [2] Xiao, D., Jiang, L. and Li, T. (2018) *Exploration of Training Objectives and Implementation Pathways for Applied Big Data Talents*. *Heilongjiang Education (Higher Education Research and Evaluation)*, 8, 74-75.
- [3] Wu, X., et al. (2016) *Public Policy Process: Formulation, Implementation and Management*. Translated by Ye, L., et al. Shanghai: Gezhi Publishing House & Shanghai People's Publishing House, 52.
- [4] Zhang, L. (2022) *Exploration of Innovative Thinking Ability Cultivation in Graduate Courses: A Case Study of*

Power Electronic System Modeling and Simulation Course. China Modern Educational Equipment, 1, 106-108.

[5] *Liang, Y. (2007) Strengthening Practical Teaching Is an Important Approach to Cultivating Innovative Talents in Liberal Arts at Universities. Cultural and Educational Materials, 11, 164-165.*