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A Study on the Collaborative Mechanism of University-Local Government Co-Construction of Artificial Intelligence General Education Bases

Junjian Tang*. Hui Ma. Junni Mu. Ying Wang. Shunli Hao and Yan Zhang
Beijing International Studies University, Beijing 100024, China
Email: tangjunjian@bisu.edu.cn

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Abstract

With the rapid advancement of artificial intelligence (AI) technologies, their deep integration into various societal domains has raised higher demands for universal scientific and technological literacy. Universities serve as core hubs for technological innovation and talent cultivation, while local governments act as key drivers of regional development and public service provision. The co-construction of AI general education bases through university-local government collaboration represents an innovative pathway to promote AI literacy, enhance public digital competence, and support local socio-economic development. This paper focuses on the operational mechanisms of such co-constructed AI general education bases, analyzing their background and significance, exploring collaborative models and operational frameworks, identifying critical challenges, and proposing optimization strategies. The aim is to provide theoretical support and practical reference for building a sustainable and high-quality AI general education system.

Keywords

Artificial Intelligence; General Education; University-Local Collaboration; Operational Mechanism; Educational Innovation

1. Introduction

Artificial intelligence is reshaping industrial structures, social systems, and human lifestyles at an unprecedented pace. The State Council's *Next Generation Artificial Intelligence Development Plan* explicitly calls for "implementing a nationwide intelligent education initiative and introducing AI-related curricula in primary and secondary schools, gradually promoting programming education." Against this backdrop, establishing a comprehensive AI general education system for all citizens has become a national strategic imperative. However, neither educational institutions nor local governments alone can effectively shoulder the large-scale, high-quality dissemination of AI education. Universities possess advanced technological re-

sources, specialized faculty, and robust research capabilities, while local governments offer policy support, financial investment, and extensive community networks. Therefore, exploring a "university-local co-construction" model that integrates these complementary strengths to establish AI general education bases holds significant practical and strategic value.

This study systematically examines the intrinsic logic, operational mechanisms, and practical pathways of university-local co-constructed AI general education bases, aiming to provide replicable and scalable solutions for enhancing regional AI education equity and quality.

2. Necessity and Significance of University-Local Co-Construction

The co-construction of AI general education bases is not only an effective approach to address the mismatch between educational resources and societal demand but also a strategic initiative for technological empowerment and regional coordinated development. Its necessity and profound significance are manifested in the following aspects:

2.1. A Mandatory Requirement for Implementing National AI Strategy

The Next Generation Artificial Intelligence Development Plan mandates "nationwide intelligent education" and AI curricula in K–12 education, signaling a shift from higher education to foundational education and from specialized to general education. Co-constructed bases serve as critical vehicles for translating national policy into local practice, effectively bridging the "last mile" of policy implementation.

2.2. A Core Pathway to Cultivating Future Citizens

In the AI era, understanding AI fundamentals, applications, and ethical boundaries has become essential "digital literacy." General education bases foster correct technological awareness among the public—especially youth—combating both "technophobia" and "techno-utopianism," while nurturing critical thinking, computational thinking, and innovation.

2.3. Addressing Severe Shortages in K–12 AI Education Resources

Primary and secondary schools widely lack qualified AI teachers, structured curricula, and teaching materials. Universities can "cascade down" high-quality resources—including faculty, courses, and platforms—through co-construction, alleviating resource scarcity in grassroots education.

2.4. Bridging Regional and Socioeconomic Divides to Ensure Educational Equity

By extending AI education to counties, townships, and rural areas, co-construction mechanisms can provide equitable access to cutting-edge technology for under-

served populations, narrowing the "digital divide."

2.5. Providing Talent and Intellectual Support for Local Industrial Transformation

Bases serve not only students but also enterprise employees, community residents, and government staff through AI training, workshops, and technical consultations, directly supporting local industries such as smart manufacturing, digital agriculture, and intelligent tourism.

2.6. Facilitating University Research Commercialization and Social Engagement

Co-construction offers universities real-world "testing grounds" to apply lab-based innovations to community services, public administration, and cultural heritage, achieving deep integration of "industry-academia-research-application."

2.7. Cultivating Local Innovation Ecosystems and Attracting External Resources

A high-quality AI education base enhances a region's innovation image, attracting tech firms, investors, and research teams, thereby fostering an innovation-friendly environment.

2.8. Addressing Societal Challenges Posed by AI

Through courses on AI ethics, data security, and human-AI collaboration, bases help the public rationally assess AI risks—such as privacy breaches and algorithmic bias—and cultivate responsible AI users and watchdogs.

2.9. Stimulating Grassroots Innovation

By providing open labs, maker spaces, and mentorship, bases empower citizens to apply AI to real-world problems (e.g., environmental protection, transportation, health), fostering a culture of bottom-up innovation.

2.10. Enhancing Public Scientific Literacy and Lifelong Learning Capacity

In an era of rapid technological change, bases offer continuous learning opportunities, cultivating adaptive and self-directed learners.

2.11. Offering Authentic Learning Contexts for University Students

Bases provide invaluable internships and volunteer opportunities for students in AI, educational technology, and social sciences, enabling them to transition from "knowledge learners" to "social contributors."

2.12. Establishing a Sustainable Collaborative Governance Model

Co-construction itself exemplifies innovative social governance, fostering mutual trust, shared responsibility, and resource synergy between universities and local governments.

3. Core Components of the Collaborative Mechanism

The successful operation of co-constructed AI general education bases relies on an integrated, dynamic system comprising five interdependent subsystems:

3.1. Organizational and Management Mechanism

- Joint Steering Committee (Strategic Layer): Co-chaired by university and local government vice-leaders, responsible for strategic planning, major decisions, and cross-sectoral coordination.
- Permanent Management Office (Operational Layer): Staffed with full-time professionals for daily operations, project execution, and external liaison.
- Expert Advisory Committee (Intellectual Support Layer): Comprising scholars and practitioners in AI, education, ethics, and industry to ensure scientific and forward-looking development.

3.2. Resource Investment and Sharing Mechanism

- Diversified Funding: Combines government appropriations, university in-kind contributions (faculty, courses, labs), corporate sponsorships, and fee-based services.
- Open Resource Pool: Shared physical spaces (labs, community centers), digital platforms (MOOCs, virtual simulations), and compliant data resources.

3.3. Curriculum Development and Teaching Mechanism

- Tiered Curriculum System: Customized for K–12 (AI literacy), university students (technical depth), professionals (industry applications), and seniors (digital inclusion).
- "Dual-Mentor" Teaching Model: University faculty deliver theory; local teachers and engineers provide practical guidance.
- OMO (Online-Merge-Offline) Instruction: Blends self-paced online learning with immersive offline workshops and competitions.

3.4. Collaborative Talent Development and Community Service Mechanism

- University Student Platform: For internships, volunteering, research, and entrepreneurship.
- Local Service Window: Delivering AI literacy programs to communities and enterprises.
- Innovation Incubation Channel: Scaling up successful educational products and

AI applications.

3.5. Evaluation and Feedback Mechanism

- Multi-dimensional Assessment: Evaluates learner outcomes, teaching quality, operational efficiency, and social impact.
- Continuous Improvement: Uses regular reports and third-party evaluations to inform iterative refinement via a “Plan-Do-Check-Act” cycle.

4. Analysis of Typical Collaborative Models

Three representative models emerge from practice:

4.1. “Government-Led, University-Supported” Model

In this model, the local government acts as the initiator, organizer, and primary resource provider of the collaboration, assuming the roles of "Party A" and "overall coordinator." Universities, in contrast, serve as the specialized "Party B," offering intellectual support and professional services. Based on regional development strategies or public welfare initiatives, the local government incorporates the establishment of artificial intelligence (AI) general education bases into its official work agenda, drives the initiative through administrative authority, and provides the primary financial funding and policy support. Within the framework and requirements set by the government, universities undertake specific tasks such as curriculum development, teacher training, and technical platform construction.

This model is suitable for policy-driven regions where local governments place high priority on educational innovation or digital transformation and have clear policy objectives. It is also applicable to regions with strong fiscal capacity, where local governments can afford the costs of both establishing and sustaining the base over the long term. The model works well in areas with relatively concentrated higher education resources—specifically, regions hosting strong universities whose willingness or capacity to proactively serve local needs remains to be fully mobilized. Furthermore, it is ideal for large-scale, inclusive initiatives aimed at rapidly and broadly disseminating AI education across all primary and secondary schools or communities within the region.

Advantages:

- Government administrative involvement enables rapid resource integration and efficient project implementation, ensuring strong execution and driving force.
- Primary funding comes from government budgets, providing relatively stable financial support that can sustain large-scale infrastructure development and long-term operations, ensuring robust resource backing.
- Facilitates unified regional planning and standardized implementation, promoting educational equity and broad coverage.

Disadvantages:

- Universities may be perceived merely as "contractors," which can weaken their motivation to innovate and sense of ownership, leading to perfunctory, compliance-driven collaboration and insufficient initiative.
- Government decision-making processes are often lengthy, resulting in slow responsiveness to project adjustments and innovation, making it difficult to adapt to rapidly evolving technologies and societal needs—thus lacking flexibility.
- Over-reliance on government funding creates sustainability risks; shifts in policy priorities or leadership changes may lead to project discontinuation.

4.2. "University-Led, Local-Coordinated" Model

In this model, the university serves as the initiator and core driving force of the collaboration. Leveraging its disciplinary strengths, research achievements, or commitment to social service, the university proactively designs and advances artificial intelligence (AI) general education initiatives. The local government acts as a key "collaborator" and "supporter," providing essential policy support, physical space, funding, and access to community networks. Within this partnership, the university retains significant academic autonomy and project leadership, taking charge of curriculum development, faculty team formation, and core platform operations. Meanwhile, the local government facilitates project implementation and scaling by offering complementary support, thereby creating a favorable environment for the initiative's successful Landing and broader dissemination.

This model is suitable for regions where universities possess strong research capabilities—particularly those with distinctive disciplinary strengths, leading research teams, and notable innovations in the field of artificial intelligence.

It is well-suited to innovation-driven areas where local development prioritizes technological advancement and talent concentration, and where governments are eager to provide universities with "testing grounds" for innovative exploration.

It also applies to regions with clear application-oriented goals, where projects aim to translate cutting-edge university research into public-facing science communication products or educational tools.

Furthermore, it fits regions with distinctive development aspirations, where local authorities seek to leverage university resources to build a unique, recognizable brand in science and technology education.

Advantages:

- As the source of innovation, universities can introduce the most cutting-edge technologies and pedagogical approaches, making project content more forward-looking and engaging, with strong innovative appeal.
- Faculty and students are often highly motivated to translate research into practice and engage in community service, providing robust internal momen-

tum and high levels of initiative.

- It is easier to develop a distinctive and high-quality educational brand with strong public recognition, enhancing the reputation of both the university and the local region—yielding significant branding benefits.

Disadvantages:

- If local leadership does not prioritize the initiative, it may be difficult to secure sufficient resources, leading to uncertain or inconsistent local government support.
- University-led projects often start at a high level with substantial costs, making them difficult to replicate or scale rapidly across broader regions—posing significant challenges to large-scale adoption.
- Potential misalignment between the academic logic of universities and the administrative logic of government can create tensions, demanding strong communication and coordination capabilities—thus presenting considerable challenges in collaborative governance.

4.3. "Project-Driven, Multi-Stakeholder" Model

This model does not aim to establish a long-term, fixed "base." Instead, it centers on specific projects with clearly defined objectives—such as organizing an AI summer camp, developing a set of AI literacy courses, or addressing a particular community smart-city challenge—and forms a temporary, networked collaboration alliance around these goals. The participating entities extend beyond universities and local governments to include a wide range of stakeholders such as enterprises, primary and secondary schools, community organizations, non-governmental organizations (NGOs), and foundations. These partners come together based on shared interests and complementary resources, with roles, responsibilities, and benefits clearly defined through project contracts or cooperation agreements. Once the project concludes, the collaboration may dissolve or reconfigure around a new initiative.

This model is suitable for resource-constrained regions that cannot afford long-term, large-scale base construction but wish to accumulate experience and cultivate an innovation ecosystem through short-term projects.

It is also appropriate for areas with highly diverse needs, where communities, schools, and demographic groups have significantly different requirements, necessitating flexible and customized solutions.

It works well in regions with vibrant grassroots innovation—such as towns and subdistricts—where there is strong local demand for innovation but a lack of systematic resources.

Furthermore, it is ideal for the pilot and exploration phase, allowing stakeholders to test operational models and validate feasibility through small-scale initiatives before committing to the development of a large, permanent base.

Advantages:

- Highly responsive to specific, granular needs, with diverse collaboration formats, strong adaptability, and exceptional flexibility.
- Effectively mobilizes capital and resources from enterprises, civil society, and other sectors, reducing the burden on government and universities as sole funders—enabling broad resource integration.
- Short project cycles keep failure risks manageable, facilitating model innovation, rapid iteration, and low-cost experimentation.
- Actively engages societal stakeholders, enhancing public buy-in and long-term viability—resulting in high levels of community participation.

Disadvantages:

- Projects may lack interconnection, making it difficult to build a systematic, coherent, and continuous educational framework—leading to weak systemic integration.
- Resources are scattered across disparate initiatives, hindering the concentration of efforts needed for large-scale impact; this fragmentation dilutes brand visibility and diminishes cumulative effect.
- Involving multiple stakeholders increases coordination costs, and disputes over roles, responsibilities, and benefit-sharing are common—resulting in high management complexity.
- After project completion, insufficient mechanisms for knowledge retention and capacity building may limit the accumulation of lasting impact, constraining long-term influence.

The three models described above are not mutually exclusive; rather, they represent different points along a spectrum of university-local government collaboration. In practice, successful partnerships often exhibit characteristics of model integration. The key to selecting an appropriate approach lies in precisely aligning the model with local realities. Decision-makers should conduct in-depth analyses of their region's resource endowments, developmental needs, and existing collaboration foundations, and then tailor—or even innovatively adapt—the cooperation model accordingly. Only through such context-sensitive design can the collaborative establishment of AI general education bases achieve maximum effectiveness and impact.

5. Challenges and Countermeasures

Challenges:

- Disagreements frequently arise between universities and local governments regarding management, investment, and benefit sharing, often due to unclear demarcation of roles and responsibilities.
- Overreliance on short-term project funding leads to a lack of stable, long-term financial mechanisms, resulting in insufficient resource sustainability.
- Educational content often fails to align with local needs, lacking relevance, practicality, and appeal; courses tend to be highly homogenized.

- There is a severe shortage of interdisciplinary instructors who possess both AI expertise and proficiency in general education, leading to weak teaching capacity.
- It is difficult to quantify educational outcomes and social impact due to the absence of a robust evaluation framework.

Recommendations:

- Clarify governance and responsibilities: Formalize collaboration through strategic partnership agreements that clearly define rights, responsibilities, and benefits, and establish long-term cooperative mechanisms.
- Ensure sustainable funding: Create dedicated development funds and explore diversified financing channels, including government appropriations, social donations, and service-based fees.
- Customize content to local context: Conduct in-depth needs assessments and tailor AI literacy curricula to regional industrial characteristics and public demands.
- Strengthen faculty capacity: Implement targeted training programs to enhance instructors' capabilities in AI general education and cultivate a "dual-qualified" teaching force—proficient in both technical AI knowledge and pedagogical skills.
- Build a credible evaluation system: Engage independent third-party evaluators to develop a scientific, transparent, and outcome-oriented performance assessment framework.

6. Conclusion and Outlook

University-local co-construction of AI general education bases is a vital innovation for democratizing AI literacy. Its success hinges on robust organizational design, efficient resource integration, adaptive pedagogy, and continuous evaluation. Future efforts should strengthen top-level policy support and foster a collaborative ecosystem guided by "government leadership, university ownership, and multi-stakeholder participation." Crucially, responsible AI principles—emphasizing ethics and data security—must be embedded throughout the curriculum to cultivate digitally competent citizens with both technical prowess and humanistic values. As technology and societal needs evolve, the co-construction mechanism must advance toward greater intelligence, personalization, and ecological integration, providing foundational support for a learning society and national technological self-reliance.

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