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Research on the Construction Path of "University-City Integration" Practical Education for Design Disciplines in Application-Oriented Urban Universities from the Perspective of Symbiosis Theory

Zhou Ran*, Chen Li
School of Design, Jianghan university, Wuhan, Hubei, China
Corresponding author, E-mail: ranran418@163.com

Abstract:
Currently, the construction of "New Liberal Arts" and the connotative development of higher education have become two key strategic orientations, putting forward requirements for profound reforms in the talent cultivation model of application-oriented universities. Against this backdrop, design disciplines in application-oriented urban universities are faced with the important task of breaking through the limitations of traditional education models, deeply integrating into urban development, and achieving collaborative progress. This paper introduces the principle of "mutualistic symbiosis" from symbiosis theory into the educational practice of "university-city integration," reconstructs the ethical framework of the "university-city symbiosis" from three dimensions—value symbiosis, resource symbiosis, and cultural symbiosis—and thus constructs a "professional ability + general literacy" double-helix cultivation paradigm for design disciplines. It explores the path of practical education for design disciplines from three dimensions: deepening educational concepts, integrating educational systems, and transforming educational scenarios.

Keywords:
Symbiosis Theory; Urban Universities; University-City Integration; Practical Education

In recent years, the construction of "New Liberal Arts" and the connotative development of higher education have become important strategic directions in China’s higher education sector (Ministry of Education, Declaration on the Construction of New Liberal Arts, 2020). "New Liberal Arts" aims to break disciplinary barriers, promote interdisciplinary integration, and cultivate compound talents adapting to the needs of the times (Zhang Shuting, 2023). The connotative development of higher education emphasizes improving educational quality and highlighting universities’ contributions to social development (Zhou Hongyu, 2022). As an important part of the higher education system, local application-oriented universities should continuously enhance their ability to serve regional economic and social development, actively explore the path of high-level university-city integration, become an important source of new momentum for regional economic and social development, and provide strong intellectual support and talent guarantee for high-quality economic and social development (Chen Yongguang, 2025).

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Against this background, how design disciplines in application-oriented urban universities break through the limitations of traditional education models and achieve in-depth integration and collaborative development with cities has become an urgent issue to be addressed.

1 Practical Dilemmas of Practical Education for Design Disciplines in Application-Oriented Urban Universities

Application-oriented urban universities are oriented towards serving local economic and social development, with the goal of cultivating application-oriented talents with outstanding practical abilities. As an integration of multiple disciplines, design disciplines emphasize interdisciplinarity and practicality, which is not only the need for disciplinary development but also an inevitable choice for talent cultivation. Practical education is an effective way to fully implement the fundamental task of fostering virtue through education. It cannot solely rely on organizing students to carry out practical activities, but must combine the characteristics of design disciplines, focus on professional and talent training requirements, and achieve the unity of knowledge impartment, ability cultivation, and value guidance through multi-subject collaborative education.

However, there are still some difficulties and problems in specific practice.

Firstly, there is insufficient conceptual understanding. In the specific teaching process, due to the inadequate understanding and implementation of practical education and curriculum ideology and politics by some teachers, curriculum ideology and politics have not been effectively integrated into professional learning, and there is still a disconnection between ideological and political education and professional teaching. Insufficient attention is paid to cultivating students' social responsibility, cultural inheritance, craftsmanship spirit, critical thinking, professional norms, sustainable development awareness, and international perspective in professional practice.

Secondly, the integration of collaborative education is insufficient. There is a lack of interdisciplinary teaching resources, the faculty for multi-disciplinary integration is weak, and the academic team and education team have not formed an effective linkage.

Thirdly, university-city cooperation needs to be strengthened. When urban universities use urban resources for practical teaching, most university-local projects are in the stage of projectization and fragmentation, and a systematic and institutionalized integration mechanism has not yet been formed (Peng Daiying, 2025). Traditional practical education scenarios are insufficiently connected with the rich real scenarios and diverse needs of cities, making it difficult to effectively improve students' ability to solve practical problems and innovative thinking.

2 Theoretical Framework of University-City Integration Practical Education Based on Symbiosis Theory

Symbiosis Theory initially emerged in the field of biology, proposed by German mycologist Anton de Bary in 1879 to describe the state in which organisms of different species live together based on certain material

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connections. Its extended application in the social sciences has formed an analytical model including three core elements: symbiotic units, symbiotic modes, and symbiotic environment (Zhou Yibin, Xiao Gangling, 2023).

The "university-city integration" practical education breaks the physical boundaries of traditional classrooms, serving as an open educational ecosystem with cities as textbooks, projects as carriers, and growth as goals. Universities and cities constitute two core symbiotic units: universities have intellectual advantages in knowledge production and talent cultivation, while cities provide practical soil for industrial carrying and cultural accumulation.

Therefore, introducing the principle of "mutualistic symbiosis" from symbiosis theory into the educational practice of "university-city integration," reconstructing the ethical framework of the "university-city symbiosis" from three dimensions—value symbiosis, resource symbiosis, and cultural symbiosis—and further clarifying the symbiotic relationship between university design disciplines and cities in knowledge production, cultural inheritance, and value shaping, is the key to building a university-city integration practical education classroom.

(1) Value Symbiosis

Curriculum Ideology and Politics + Design Ethics: Curriculum ideology and politics emphasize cultivating students' political literacy, moral character, and social responsibility, while design ethics focus on moral norms and value judgments in design practice. Curriculum ideology and politics provide ideological guidance for design ethics practice, helping students deeply understand the social significance and moral responsibility of design while mastering design skills, forming correct design values, and continuously inputting design talents who uphold integrity and innovate for urban construction. This is the mission of design disciplines in urban universities to promote high-quality urban development.

Urban Spirit + Student Character: Urban spirit refers to the unique value pursuit and spiritual outlook formed in the long-term development of a city. Based on the dissemination of urban cultural spirit, urban universities integrate urban spirit into the shaping and cultivation of students' character, encouraging students to activate the cultural vitality of urban spirit through innovative design, guiding students to internalize urban spirit as a spiritual pursuit, and at the same time transforming abstract concepts into perceptible design language and externalizing them into practical actions serving the inheritance of urban spirit.

(2) Resource Symbiosis

Urban Needs + Disciplinary Empowerment: Urban needs provide a clear direction for the development of design disciplines in urban universities, prompting design disciplines to continuously adjust teaching practice and research content, cultivate professional talents adapting to urban development needs, and realize mutual promotion between universities and urban development.

Serving urban development and needs is an unshirkable responsibility of urban universities. Focusing on enhancing urban cultural soft power, design disciplines provide comprehensive empowerment for urban cultural construction and development needs with their professional advantages, cultivate a number of local design talents through in-depth integration of industry, education, and research, promote the widespread dis-

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semination of urban cultural concepts through various channels such as academic exchanges and training, and promote the excavation and application of urban cultural resources by strengthening the protection, inheritance, and research of urban cultural heritage.

University-Local Collaboration + Resource Interconnection: The cultivation of design talents with innovative spirit and practical abilities by urban universities for urban development is inseparable from the construction of a university-local collaborative education system. With the continuous changes in urban demand for design talents, more emphasis is placed on students' practical ability and innovative ability. Therefore, by establishing close collaborative relationships with local governments, enterprises, communities, etc., the theoretical classroom is introduced into real design projects, allowing students to feel market demand up close, improve their ability to solve practical problems, and narrow the distance between market demand and the cultivation of design talents in universities. Through effective resource interconnection, universities and localities share profound theoretical resources, research results, and rich practical experience. By building an ecosystem of in-depth integration of industry, education, research, and application, they jointly promote the development of design education, advance the progress of relevant urban industries, and realize two-way empowerment and value co-creation of university-local resources.

Multi-University Alliance + Digital Co-construction: In addition to university-local cooperation, the cooperation and exchange of design disciplines among multiple universities in the city are also indispensable. Through cross-university collaborative research, joint efforts to solve problems in the design field, joint development of design education and teaching research, and joint construction of digital resources such as online design course platforms and virtual laboratories, resource co-construction and sharing are realized, the collaborative development of design education is promoted, and broader and higher-quality intellectual support is provided for university-city integration.

(3) Cultural Symbiosis

Traditional Culture + Contemporary Design: The diversity and sustainability of urban culture are largely reflected in the modern deconstruction and reconstruction of traditional culture. As an important driving force for urban cultural development, the educational practice of cultivating design innovation talents coincides with the needs of urban cultural development. On the one hand, it deeply integrates traditional culture with contemporary design, injecting profound cultural connotations into contemporary design to enhance the cultural value and artistic charm of design works. On the other hand, it attaches importance to the creative transformation of traditional cultural elements using modern design concepts, methods, and technologies, thereby realizing inheritance and innovation.

Regional Culture + Urban Brand: Regional culture is a unique symbol and cultural business card of a city. More and more cities have clearly realized the necessity and urgency of building urban images (Su Yonghua, 2013). The shaping and dissemination of urban brands is an important way to enhance the productivity of regional culture. Design disciplines present urban culture, development concepts, image positioning, and construction layout in the form of visual symbols, highlighting urban characteristics and cultural charm through unique artistic expressions and visual design, supporting the dissemination of urban brands, and further promoting regional culture to facilitate its inheritance and development.

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Cross-Culture + Local Values: In the context of globalization, students are encouraged to adopt an open and inclusive attitude, actively learn from advanced international design concepts, technologies, and methods, and understand the development trends and cutting-edge dynamics of the global design industry. At the same time, cultivate students' cultural awareness in the context of globalization, establish the idea that "design has no national borders, but culture has roots," base themselves on Chinese cultural roots, integrate Chinese stories and cultural elements into design works, spread excellent Chinese culture to the world, and demonstrate national cultural soft power. The integration of cross-culture and local values helps enhance students' cultural confidence, and is also an effective path to promote cultural export and improve the governance capacity of internationalized cities.

3 Constructing the "Professional Ability + General Literacy" Double-Helix Cultivation Paradigm for Design Disciplines

Under the guidance of symbiosis theory, through university-city concept resonance, resource sharing, cultural symbiosis, and talent co-cultivation, the "professional ability + general literacy" double-helix cultivation paradigm for design disciplines is constructed to realize the in-depth integration of values and professional practice. The research on the path of practical education for design disciplines can be carried out from three dimensions: deepening educational concepts, integrating educational systems, and transforming educational scenarios.

3.1 Deepening Educational Concepts

Strengthening the Concept of Integrating "Great Ideological and Political Education" into Design Education:School education should have the combined effect of a 360-degree moral education "melting pot" (Gao Deyi, Zong Aidong, 2017). Ideological and political education is fully infiltrated into all links of design discipline education and teaching, from the inspiration of design thinking to the implementation of design schemes, achieving the embedded integration of fostering virtue through education and practical education. Case teaching and scenario simulation are introduced into theoretical classrooms to guide students to pay attention to social hot issues such as design ethics, rural revitalization, and environmental public welfare.

Practical classrooms are integrated with professional practice, returning to the practical nature of design disciplines, stimulating students' curiosity and desire for knowledge, cultivating sharp observation, rich imagination (especially creative imagination), and the awareness and ability to analyze and solve problems.

Social classrooms guide students to go out of classrooms and campuses with design professional issues through social practice, enter communities and enterprises, understand social conditions and national conditions in various practical activities, public welfare activities, and volunteer services, and improve their emotional resonance ability and interpersonal communication skills. Through design intervention in specific social issues, students' awareness of serving society and people through design is cultivated, and they are encouraged to take on missions and shape their character in social responsibility.

Practicing Interdisciplinary Integration under the "New Liberal Arts" Concept: Break down barriers between design disciplines and other disciplines and build an interdisciplinary curriculum system. Design dis-

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ciplines are deeply integrated with sociology, psychology, engineering, computer science, etc. By offering interdisciplinary courses and encouraging students to participate in school-enterprise cooperation projects and interdisciplinary practice projects, students are guided to propose innovative solutions from different disciplinary perspectives, cultivating their comprehensive ability to solve complex problems, as well as teamwork, communication, and interdisciplinary thinking abilities.

Deepening the Practical Education Concept of "University-City Symbiosis": Establish the educational concept of "city as classroom," taking various urban resources as vivid materials and practice venues for design teaching. Students' learning and practice in real urban environments enable them to more deeply understand the close connection between design and urban development, as well as residents' lives, and improve their sense of identity and responsibility for urban culture. Cultivate students' awareness of participating in urban construction, making them realize that design is not only about creating beautiful things but also an important means to promote sustainable urban development and improve residents' quality of life, so that they can feel the value and significance of their own designs and enhance their sense of responsibility and mission for urban construction.

3.2 Integrating Educational Systems

Collaborative Linkage of Educational Subjects: Fully utilize the advantages of multi-disciplinary collaborative development in universities, break disciplinary and professional boundaries, cross departments and majors, unite full-time ideological and political teachers and teachers from other colleges, and invite design industry alumni, experts, and scholars with industry-education integration and international design exchange experience to form an interdisciplinary, cross-campus faculty team with professional complementarity and industry linkage. Continuously carry out theoretical teaching and professional practice seminars on design disciplines, build a faculty team with cross-professional collaboration, school-enterprise-research integration, and both practical depth and theoretical height. At the same time, student counselors, as managers, organizers, and evaluators of student practice teams, participate in the guidance and evaluation of student practical education.

Organic Integration of Curriculum Systems: Promote the integration of design-related courses and general education courses, increase the knowledge and humanism of courses from the perspectives of majors, industries, countries, cultures, and history involved in the courses, and enhance their leading role, timeliness, and openness.

Set up courses such as "Design and Society" and "Design Ethics and Morality" in the basic course module to cultivate students' correct design values.

In the professional core course module, integrate social needs and practical cases to guide students to think about the social impact and responsibility of design in professional learning, promote the construction and improvement of school-enterprise cooperation classrooms, integrate industrial practice cases into theoretical learning, and enhance students' industry cognition and market insight.

In the links of course assessment and professional output ability training (such as course exams, graduation projects, and group assignments), strengthen value guidance, cultivate students' rigorous academic attitude,

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integrate intellectual property rights, user rights and interests, cultural ethics, and professional integrity into teaching, and deepen professional ideals and professional norms. Interdisciplinary modules are offered in professional elective courses, encouraging students to choose relevant cross-professional courses according to their interests and career plans, broaden their knowledge and horizons, think and solve design problems from multiple perspectives, and cultivate their interdisciplinary thinking ability.

In professional practice sections (such as cognitive practice, graduation internship, and graduation design), guide students to integrate learning and thinking, and unify knowledge and action, cultivating their ability of innovative exploration.

In the second classroom activity system, continuously promote school-enterprise cooperation, design competitions, labor education, mental health, and volunteer services, encouraging students to pay attention to social hot issues, understand social needs in practice, contribute to social development with their professional knowledge, and enhance professional identity and social responsibility.

Through integrated education and teaching, students are promoted to recognize problems in theoretical learning, discover problems in professional practice, analyze and solve problems in design research and practical projects, and participate in disciplinary competitions and innovation and entrepreneurship competitions to promote the implementation of design research and projects, forming a systematic closed loop of practical education for mutual promotion.

Multi-Dimensional Evaluation System: The evaluation of practical education is mainly based on multi-dimensional formative evaluation, reflecting the completeness of evaluation through multiple evaluation subjects, multi-dimensional evaluation dimensions, and multiple evaluation links. Evaluation subjects include experts, teachers, enterprise mentors, counselors, and students. Different evaluation subjects inspect the effect of practical education from different evaluation dimensions and links, such as teaching content and objectives, professional practice design and organization, online and offline resource library construction, students' design innovation ability, technical application ability, project execution ability, professional literacy, and adaptability.

3.3 Transforming Educational Scenarios

Expanding from Classrooms to Society: Expand the traditional classroom teaching model into the rich application scenarios of urban construction through project-based teaching practice, focusing on the transformation and application of teaching achievements, connecting with market demand in combination with urban cultural construction, emphasizing information collection and practical research, and carrying out the construction of off-campus practice bases and university-local-enterprise cooperation.

Cooperate with urban cultural and tourism bureaus, museums, cultural heritage protection centers, and cultural characteristic scenic spots to carry out cultural and creative product design and digital protection of cultural heritage around urban cultural tourism and regional image, allowing students to embrace traditional culture with creative expression and enhance their cognition and identity of traditional culture.

Cooperate with various design enterprises and creative industrial parks, enabling students to come into close contact with actual design projects, understand market demand, improve the implementation ability of

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design practice, enhance their insight into the design industry and awareness of professional norms, thereby enhancing their future employment competitiveness.

Cooperate with urban streets and communities to carry out projects such as old community renovation and block cultural creativity planning, cultivating students' sense of social service and ability to solve practical problems. In the process of social practice, students can not only apply classroom knowledge to practice but also cultivate their communication skills, teamwork ability, and social responsibility.

Extending Digital Educational Scenarios: With the help of modern information technology, rely on the coordination function of the government, enterprises, and industries to actively build an information exchange platform to provide students with a virtual practice environment. Students can conduct scenario simulation and design practice in virtual urban spaces, such as transforming and designing virtual commercial streets and historical blocks. Use online platforms to carry out distance teaching and guidance, breaking the limitations of time and space, realizing the organic combination of online and offline teaching, and expanding the time and space boundaries of education.

Innovating Diversified Practical Models: Provide students with more rich and diverse learning and practice opportunities through the innovation of diversified practical models, promoting their all-round development.

Innovate the form of "walking design courses" and design a series of themed practical activities based on urban characteristics. Visit revolutionary sites and memorial halls to carry out the development of projects such as cultural and creative product design and tourist route planning. Visit intangible cultural heritage workshops to explore the contemporary value and redesign elements of intangible cultural heritage. Participate in urban planning and design, guiding students to focus on urban construction pain points and pay attention to urban development. Visit corporate museums to understand the evolution of industrial development and insight into industry development trends. Organize students to participate in cross-regional and cross-cultural design exchange activities through Sino-foreign cooperation projects. Hold international design workshops, invite foreign designers and students to participate in design projects with local students, and promote the exchange and collision of design concepts and methods under different cultural backgrounds. Through field investigation, research interviews, design practice, and other links, students achieve the organic unity of knowledge learning, ability training, and value shaping, and cultivate their international perspective and innovative spirit.

4 Conclusion

By reconstructing the ethical framework of the "university-city symbiosis" and constructing the "professional ability + general literacy" double-helix cultivation paradigm for design disciplines, this paper explores the construction path of the "university-city integration" practical education classroom for design disciplines in application-oriented urban universities. The research aims to provide theoretical support and practical guidance for the development of design disciplines in application-oriented urban universities, promote the innovative development of design disciplines under the background of "New Liberal Arts" construction and the connotative development of higher education, cultivate high-quality design talents with both solid professional ability and good general literacy, and better serve urban development.

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