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Research on the collaborative education mechanism of "government-application-industry-university-research" in the visual communication design major under the background of new liberal arts construction

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Abstract

This paper focuses on constructing and optimizing the collaborative education mechanism of government, application, industry, university, and research in the context of new liberal arts construction, specifically for the visual communication design major. The article systematically analyzes the concept, structure, and role of this mechanism in talent cultivation, as well as the existing challenges in training design professionals. Based on this, the paper proposes a collaborative education strategy aimed at strengthening the integration of theory and practice, enhancing innovation and cross-disciplinary capabilities, deepening interdisciplinary collaboration, and optimizing the overall talent cultivation system. The research provides new insights into cultivating interdisciplinary, innovative design professionals with strong cultural literacy and the ability to meet the evolving needs of society in the AI era.

Keywords New Liberal Arts Construction; Visual Communication Design; Government-Application-Industry-University-Research; Collaborative Education

The full-scale rollout of new liberal arts construction began with the release of the *Declaration on New Liberal Arts Construction* in November 2020. This initiative aims to enhance the nation's cultural soft power and strengthen cultural confidence. From an educational philosophy perspective, it advocates for the deep integration of liberal arts with emerging technologies and interdisciplinary knowledge, with the goal of cultivating innovative design and application talents equipped with cross-disciplinary perspectives and diverse skill sets.

Currently, visual communication design education faces unprecedented challenges and opportunities. It is imperative to establish a multi-domain, interdisciplinary collaborative education mechanism integrating government, application, industry, university, and research (GAIUR), which promotes the optimal allocation of educational resources and enhances the efficiency of talent cultivation.

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The implementation of new liberal arts construction signifies that training visual communication design professionals should emphasize the integration of creative design thinking with advanced technologies. In terms of talent cultivation objectives, students are expected to develop a solid foundation in design theory and practical skills, as well as the ability to apply modern information technologies to express creative ideas innovatively. Moreover, they should be proficient in effective communication and teamwork within multicultural environments.

Graduates of design majors should not only contribute to traditional industries such as advertising and packaging design but also demonstrate unique value in emerging fields such as digital media and interactive design. Against this backdrop, this paper proposes the construction and optimization of a GAIUR-based collaborative education mechanism for visual communication design within the framework of new liberal arts construction, aiming to provide valuable insights for cultivating versatile, innovative design professionals with profound cultural literacy and the ability to meet the evolving demands of contemporary society.

1 Overview of the GAIUR Collaborative Education Mechanism

1.1 Concept of GAIUR

With the advancement of China's strategies to become a cultural superpower, along with initiatives such as Digital China and science-education rejuvenation, fields such as digital cultural heritage, museum heritage, the cultural metaverse, and digital art have emerged as prominent research topics. These developments provide valuable insights and broaden the research scope for reforming talent cultivation models in visual communication design in the new era, particularly through interdisciplinary integration and multiparty synergies exemplified by the GAIUR model. Among these, GAIUR is an innovative collaborative system that integrates production, education, scientific research, and practical application. It represents the interface and integration of technological innovation across upstream, midstream, and downstream sectors with the broader innovation environment and end users, while also deepening cognitive and practical collaboration among industries, universities, and research institutions [1].

With the development of information technology and the advent of a knowledge-driven society, the Innovation 2.0 paradigm highlights the government's central role in policy formulation and the construction of open innovation platforms, while reinforcing the dominant role of users in the innovation process. This shift drives the evolution of technological innovation from "industry-university-research" to "government-industry-university-research-application" collaboration, ultimately advancing toward the GAIUR model [2]. Within the framework of new liberal arts construction, this model emphasizes the necessity for close collaboration among government entities, users, industries, universities, and research institutions to promote innovation and advance the development of visual communication design.

1.2 Analysis of the Components of GAIUR

Within the framework of new liberal arts construction, the GAIUR collaborative education mechanism for the visual communication design major consists of five key components: government, application/users, industries/enterprises, universities, and research institutions [3-4]. These entities interact to establish a multidimensional system of collaborative education, providing strong support for the advancement of visual communication design education in the context of new liberal arts construction. Specifically:

Government (G): The government, as a macro manager and guide, creates favorable conditions for in-depth cooperation among universities, enterprises, scientific research institutions and users by formulating innovative policies, providing financial support, building cooperation platforms and improving laws and regulations. The government not only guides the optimal allocation of educational resources, but also

clarifies the direction of professional development, promotes the deep integration of production, education and research, and strengthens self-confidence and talent training in the new era. At the same time, the government supervises and manages the collaborative process to ensure effective communication and cooperation among the subjects, and provides a solid institutional guarantee and direction guidance for the innovative development of visual communication design under the new liberal arts system.

Application/User (A): As both the starting point and ultimate destination of technological innovation, application and users play a vital role in guiding design activities to accurately meet market demands. Through deep user involvement, they help shorten research and development cycles, reduce innovation risks and costs, and enhance the efficiency of the entire innovation process. Users, as both core participants and beneficiaries of the innovation system, actively influence design directions by providing timely feedback, ensuring the practicality, market relevance, and user-centered nature of innovative outcomes. In addition, employers—representing another dimension of "application"—offer direct feedback to universities regarding the effectiveness of innovation outputs, thereby facilitating the deep integration of education with industry needs. This collaborative mechanism cultivates visual communication design talents equipped with both innovative thinking and strong practical capabilities. It effectively alleviates the structural mismatch between talent supply and industry demand, while supporting the national innovation-driven development strategy.

Industry (I): Industries and enterprises, as the primary drivers of technological innovation and market demand, play an indispensable role in the collaborative education ecosystem. Through close cooperation with research institutions and universities, enterprises translate cutting-edge market trends into innovative design projects, injecting vitality and practical relevance into visual communication design education. At the same time, enterprises establish internship and training platforms that effectively bridge theoretical knowledge with real-world industrial practice. As a critical link in the transformation of innovation outcomes, enterprises not only facilitate the commercialization of design achievements but also provide universities with real-time industry feedback, thereby refining educational objectives and ensuring precise alignment between talent cultivation and evolving market needs. Within the framework of new liberal arts construction, active participation from industries promotes deeper integration among industry, universities, and research institutions. This lays a solid foundation for cultivating versatile visual communication design talents equipped with innovative thinking, practical abilities, and strong market adaptability.

University(A): Universities, as the core battle field and driving force behind new liberal arts construction, play dual roles in talent cultivation and knowledge innovation. Relying on their profound disciplinary strengths and educational resources, colleges and universities aim to cultivate compound talents skilled in both innovation and practical operation by optimizing curriculum setting for visual communication design, and intensifying practical training and fostering interdisciplinary integration. Moreover, they engage in close partnerships with governments, industries and research institutions, dynamically adjusting their talent cultivation plans based on market demands, building platforms for scientific research cooperation and encouraging student participation in research activities. This offers strong expertise and intellectual support to industry-university-research partnerships. Under the new liberal arts framework, colleges and universities are more committed to innovating teaching models, by enhancing teacher-student interaction, expanding knowledge boundaries and fostering the all-round development and improved innovation capabilities of visual communication design professionals.

Research (R): Research institutions play a pivotal role in driving knowledge innovation and achieving technological breakthroughs. They engage in both cutting-edge and fundamental research while devoting significant efforts to applied research and the development of core technologies. By leveraging their advantages in scientific equipment, talent resources, and information infrastructure, research institutions collaborate closely with universities, industries, and government entities to facilitate the transformation of technological innovations and achievements in the field of visual communication design. Within the

framework of new liberal arts construction, research institutions and universities jointly establish interdisciplinary platforms to enhance research output and foster the cultivation of talents equipped with both scientific research capabilities and cross-disciplinary thinking. These institutions serve as a core driving force for the innovative development of the visual communication design discipline and contribute to advancing the broader liberal arts landscape.

2 The Role of the GAIUR Collaborative Education Mechanism in Nurturing Visual Communication Design Talents

In the historical context of new liberal arts construction, visual communication design faces unprecedented opportunities and challenges[5]. With the rapid advancement of modern information technologies, including generative artificial intelligence (AIGC), traditional teaching models and educational mechanisms are urgently in need of reform. As an innovative talent cultivation model, the GAIUR collaborative education mechanism plays a crucial role in enhancing the quality of talent development and promoting both professional and innovative advancement within the visual communication design discipline.

2.1 Providing Practical Platforms to Strengthen Hands-on Skills

The GAIUR collaborative education mechanism offers abundant practical platforms for visual communication design students, enabling them to engage deeply in project-based design practice. These experiences continuously improve their execution capabilities, problem-solving skills, and awareness of market demands and industry trends.

2.2 Bridging Industry-University-Research Collaboration to Foster Innovative Design Capabilities

The GAIUR mechanism serves as an essential bridge for promoting profound integration among universities, research institutions, and industry. By organically linking scientific research projects with teaching activities, it introduces market-oriented, cutting-edge design concepts and advanced technical approaches into the educational process. This effectively stimulates students' creative thinking, ignites their entrepreneurial passion, and significantly enhances their innovative design competencies.

2.3 Optimizing Curricula to Improve Professional Competency

The GAIUR mechanism facilitates in-depth collaboration among universities, research institutions, and industry, allowing for a better understanding of evolving market demands and the latest industry trends. This supports timely curriculum reform and content updates, enhances students' professional knowledge and practical skills, and cultivates design talents who meet both industry needs and market expectations.

2.4 Expanding Employment Pathways to Enhance Student Competitiveness

The GAIUR mechanism broadens access to employment information, creates more job opportunities, and provides students with valuable practical experiences during real-world design projects. These opportunities enhance students' overall employability, offer guidance for future career planning, and lay a solid foundation for their professional development.

3 Challenges in the Cultivation of Visual Communication Design Talents

Against the backdrop of new liberal arts construction, visual communication design—a discipline at the intersection of art and technology—faces a growing number of challenges, which have become increasingly prominent with the rapid advancement of AIGC technologies.

3.1 Disconnection Between Theory and Practice and Limited Integration with Modern Technologies

As a practice-oriented discipline, visual communication design has the potential to enhance students' creative abilities and overall competencies through project-based learning. However, traditional teaching approaches tend to overemphasize theoretical knowledge while neglecting its integration with practical application, especially in the context of rapidly evolving AI technologies. This theory-practice disconnect has become more pronounced, with a notable absence of AI-related projects and practical training platforms[6]. Although students may acquire fundamental design principles and methods, they often lack the ability to effectively apply AI technologies in real-world design practice, making it difficult to meet industry demands for technological proficiency upon graduation.

3.2 Insufficient Innovation Capabilities to Meet the Demands of the AI Era

The rise of AIGC and other emerging technologies has both expanded and redefined the boundaries of innovation within visual communication design. This shift requires students to develop stronger innovation awareness and cross-disciplinary integration skills. However, the existing educational system falls short in cultivating these capabilities. The easy accessibility of technological tools sometimes leads students to favor formulaic design solutions, lacking independent thinking and originality. Furthermore, disparities in faculty members' understanding of emerging technologies hinder their ability to inspire students to leverage modern tools for innovative purposes.

3.3 Weak Interdisciplinary Integration and Inadequate Cultivation of Versatile Talents

Visual communication design is inherently interdisciplinary, requiring practitioners to possess knowledge spanning aesthetics, design, technology, culture, and related fields. Nevertheless, the current education system places excessive emphasis on discipline-specific instruction while neglecting interdisciplinary integration[7]. In the AI era, effectively blending cultural aesthetics with technological innovation and cultivating interdisciplinary talents with diverse competencies has become a pressing challenge for talent cultivation in visual communication design.

3.4 Mismatch Between Market Demands and Talent Cultivation and Insufficient Practical Training

Amid the rapid development of AI and data-driven technologies, many universities and colleges struggle to align with industry trends and technological advancements. Adhering to outdated teaching models and neglecting practical training exacerbates the mismatch between talent cultivation and market demands. Consequently, gaps persist between graduates' technical capabilities and the expectations of employers regarding both practical skills and overall professional competence.

4 GAIUR Collaborative Education Strategies for Visual Communication Design in the Context of New Liberal Arts Construction

In the context of new liberal arts construction, the curriculum design and talent cultivation of the Visual Communication Design major face significant challenges. Integrating modern technologies with interdisciplinary knowledge has become an urgent and primary task for reforming the discipline. This study aims to explore a GAIUR (government-application-industry-university-research) collaborative education mechanism that aligns with the current demands of talent cultivation for Visual Communication Design. Based on this mechanism, new talent cultivation strategies are proposed to meet the needs of the contemporary era. The objective is to identify innovative development pathways for the discipline, providing both theoretical and practical guidance for nurturing design talents with balanced skill sets, strong innovative abilities, and solid practical experience, thereby enhancing the overall quality of talent cultivation in the new era.

4.1 Deepening Theory-Practice Integration and Accelerating the Adoption of Modern Technologies in the Educational Ecosystem

4.1.1 Developing a Project-Based Learning Model Aligned with National Strategies

Under the framework of new liberal arts construction, the Visual Communication Design major should actively develop a deeply integrated GAIUR project-based learning model. This model must align precisely with national strategic plans and industry demands, incorporating real-world projects driven by AIGC and other cutting-edge technologies. The objective is to establish a teaching ecosystem that is guided by government departments, driven by enterprise needs, supported by research institutions, centered on university education, and grounded in student-led practice. Through this approach, students can effectively bridge classroom knowledge with technological frontiers, engaging in real-world design challenges that enhance their technical application skills and interdisciplinary integration capabilities. Faculty members, serving as project mentors, are expected to guide students in identifying innovation opportunities during practical tasks and refining their design solutions. This ensures the seamless integration of theory and practice, fostering students' innovative thinking, problem-solving abilities, and practical competencies.

4.1.2 Building an Innovative Practice Platform Connecting User Needs with Industry Applications

By leveraging government policies and financial support, the Visual Communication Design major should strive to create an innovation practice platform that tightly integrates user needs with industry demands. This platform will serve as a comprehensive environment linking education, research, and practical applications, offering students direct exposure to market dynamics and industry projects. Through initiatives such as dual-mentorship systems, "enterprise classrooms," and structured internship and training programs, students' operational skills and technological application abilities will be significantly enhanced. In addition, organizing student participation in various design competitions and exhibitions can effectively stimulate their creativity, teamwork, and applied innovation capabilities. Outstanding design projects should be encouraged to enter the commercialization process, thereby establishing a closed-loop GAIUR collaborative education mechanism. This mechanism is designed to cultivate interdisciplinary, practice-oriented design talents with high levels of innovation, practical skills, and adaptability, fully meeting the development needs of the Visual Communication Design major in the context of new liberal arts construction.

4.2 Strengthening Innovation and Cross-Border Integration to Build a New GAIUR Collaborative Ecosystem

4.2.1 Enhancing Policy-Teaching Integration and Advancing Innovation Education

Within the framework of new liberal arts construction, the Visual Communication Design major should closely align with national development strategies and cultural industry policies, using these as the fundamental reference for guiding teaching reform and innovation. Curricular development should emphasize the incorporation of interdisciplinary workshops and collaborative projects to cultivate students' abilities in cross-disciplinary integration and innovative thinking. Interactive teaching methods, such as case studies, flipped classrooms, and project-based learning, should be widely adopted to stimulate students' curiosity and exploratory spirit. These approaches foster independent thinking, creativity, and originality, while encouraging students to pursue innovative design solutions that meet evolving societal needs.

4.2.2 Establishing a Continuous Learning Mechanism and Strengthening Faculty Development

In response to the challenges and opportunities presented by emerging technologies, including Generative Adversarial Networks (GANs), colleges and universities should prioritize building a forward-looking, innovation-oriented faculty team that aligns with contemporary talent development needs. A continuous professional development mechanism for faculty should be established to enhance their mastery and integration of advanced technologies, such as artificial intelligence, virtual simulations, and blockchain applications. This can be achieved through targeted training programs, participation in interdisciplinary academic conferences, industry exchanges, and collaborative research initiatives. Faculty members should be actively encouraged to engage in interdisciplinary research and incorporate cutting-edge academic achievements into classroom teaching. This not only enriches course content but also broadens students' academic horizons. Through sustained investment in faculty development, higher education institutions can cultivate a "dual-qualified" teaching team, equipped with both theoretical expertise and practical application capabilities. Such a team will provide students with comprehensive, high-quality academic and professional guidance, thereby strengthening the overall effectiveness of the GAIUR collaborative education ecosystem.

4.3 Deepening Interdisciplinary Integration and Establishing a GAIUR Model for Cultivating Comprehensive Talents

4.3.1 Integrating Policy Guidance with Academic Expertise to Develop an Interdisciplinary Curriculum System

In line with the requirements of new liberal arts construction, the development of the Visual Communication Design major should be firmly guided by national policies and oriented toward meeting national development needs. Meanwhile, it should draw upon cutting-edge research achievements from academia, incorporating advanced topics such as artificial intelligence (AI), deep learning, machine learning theory, and digital heritage into the curriculum framework[8]. This ensures that the course content remains both innovative and application-oriented, fostering the development of a multidisciplinary, practice-driven curriculum system.

For instance, in packaging design courses, technologies such as GANs and other advanced AI models can be utilized to enhance image generation, text generation, and creative design capabilities, thereby promoting innovation and personalization in packaging design projects[9]. This approach facilitates the deep integration of interdisciplinary knowledge and strengthens students' ability to apply emerging technologies in design practice.

4.3.2 Integrating Industry Practice with Research Innovation to Promote Cross-Disciplinary Collaboration

Universities should actively promote resource sharing and complementary advantages, aligning research capabilities and curriculum practice with actual industry demands. Through interdisciplinary research projects and design practice based on real-world needs, students can enhance their practical skills, comprehensive application abilities, and teamwork under authentic industry scenarios.

This approach not only injects new talent and vitality into enterprises but also deepens industry-university-research collaboration, improving product quality and production efficiency while accelerating the transformation of research outcomes into industrial applications.

4.3.3 Establishing a Cross-Disciplinary Exchange Platform to Enhance Faculty-Student Interaction

The Visual Communication Design major is encouraged to establish a regular interdisciplinary exchange platform supported by a diverse faculty team. Initiatives such as interdisciplinary lectures, academic seminars, workshops, and collaborative projects should be organized to create opportunities for knowledge sharing, idea exchange, and cooperation among faculty and students from different disciplines.

By promoting interdisciplinary teaching and research collaboration, this platform can stimulate intellectual creativity, ignite student enthusiasm, and strengthen innovation capacity. Ultimately, it lays a solid foundation for cultivating Visual Communication Design talents equipped with cross-border thinking, interdisciplinary integration abilities, and advanced creative design skills.

4.4 Optimizing the Talent Cultivation System and Strengthening GAIUR to Align with Market Demands in the AI Era

4.4.1 Deepening the Alignment Between Market Surveys and Talent Demands

In the context of new liberal arts construction, the Visual Communication Design major should intensify collaboration with government agencies and industry employers. Guided by national development policies, the program should integrate resources from academia and industry, align market surveys with actual talent demands, and systematically analyze emerging requirements for visual communication professionals.

Research materials and data analysis suggest that combining insights from policy frameworks with academic research outcomes enables the formulation of forward-looking, practical talent cultivation programs. This ensures that training objectives are aligned with real-world market demands and future development trends, effectively preparing students for evolving industry needs.

4.4.2 Implementing a Dynamic Curriculum Adjustment Mechanism to Enhance Scientific Guidance and Teaching Practice

The Visual Communication Design program should closely monitor technological advancements, market demands, and fashion trends within the industry, and establish a dynamic curriculum adjustment mechanism for training programs. This mechanism should allow timely optimization of course objectives and regular updates to teaching content, ensuring that the curriculum remains progressive, practical, and responsive to industry developments.

During instruction, faculty members are encouraged to actively incorporate research projects into classroom teaching, promote student participation, and enhance students' research abilities and practical skills through field investigations, theoretical analysis, and project-based learning. This approach bridges the gap between theory and application, cultivating innovative design capabilities among students.

4.4.3 Strengthening Career Guidance and Planning to Facilitate Successful Employment

The program should enhance career counseling and guidance services for students to help them gain a comprehensive understanding of workplace expectations. This can be achieved by organizing career planning lectures, inviting experienced human resources professionals from leading employers to share insights, and hosting mock interview sessions.

Students should be guided to engage in early career planning, accurately define personal career goals, job preferences, and professional development pathways. Emphasis should be placed on cultivating professional qualities, work ethics, and teamwork skills to enhance students' competitiveness and growth potential in the AI-driven job market, thereby ensuring that graduates are well-equipped for successful employment.

5 Conclusion

In the historical context of new liberal arts construction, the Visual Communication Design major is confronted with unprecedented opportunities and challenges. This study systematically analyzes the concept and significance of the GAIUR collaborative education mechanism, emphasizing its critical role in enhancing the quality of talent cultivation within the major.

Focusing on pressing issues such as the disconnection between theory and practice, insufficient innovation capacity, and weak interdisciplinary integration, this paper proposes targeted strategies. These include deepening the integration of theory and practice, strengthening the organic connection between modern technologies and the educational ecosystem, enhancing innovation and cross-border integration capabilities, constructing a new collaborative cultivation ecosystem, promoting interdisciplinary integration, and optimizing the talent cultivation system. These measures aim to establish a new GAIUR collaborative cultivation mechanism that is responsive to the development needs of the AI era.

Furthermore, this paper advocates for continuous efforts to improve students' practical innovation abilities and interdisciplinary literacy, expand their employment pathways, and enhance their core competitiveness. The study provides both theoretical insights and practical references for the reform and advancement of the Visual Communication Design major under the new liberal arts framework. Ultimately, it promotes the close integration of the major with modern technologies and market demands, contributing to the cultivation of high-quality, versatile talents equipped with innovative design and application capabilities.

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