

Practice of Cultivating “T-shaped” Talent Competencies in Applied Universities’ Fashion Programs Under the Context of New-Quality Productivity

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This article aims to explore the cultivation of “T-shaped” talents in applied universities’ fashion programs under the context of new quality productivity, covering the practical path from setting ability goals to actually acquiring skills. The paper combines action research with empirical surveys, focusing on the practical transformation of abilities. Through four dimensions—reconstructing the training program, linking course modules, building practical platforms, and innovating evaluation mechanisms—it systematically explains the concrete path for the “four horizontal and three vertical” ability map to land in classrooms, integrate into projects, and connect with the industry. Based on our university’s fashion program teaching reform practice, we distilled a four-in-one ability cultivation framework: “ability map-driven, course matrix-supported, project practice-refined, dynamic evaluation feedback.” Practice shows that this system effectively enhances students’ digital design skills, cross-functional collaboration awareness, and industry adaptability, providing a transferable implementation framework for applied universities’ fashion programs to adapt to new quality productivity development.

Keywords: new quality productivity, T-shaped talents, ability cultivation, fashion program, applied universities

The new quality productive forces in the textile industry, centered on digital intelligence technology, sustainable development, and cultural empowerment, are driving the clothing industry to shift from traditional “labor-intensive production” to “cultural and knowledge creation.” Technical tools reflecting new quality productive

Acknowledgement: This research is funded by Zhejiang Provincial Educational Science Planning 2025 General Planning Project “Research on the ‘T-shaped’ Talent Training Model for Fashion Majors in Applied Universities under the Background of New Quality Productivity” (2025SCG216); Jiaxing City 2025 Cultural and Moral Education University Course Construction Demonstration Case (Research on the Integration, Innovation, and Practice of Fashion Craft Courses Based on Jiaxing Intangible Cultural Heritage Skills to Cultivate Moral Beauty).

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forces, such as AIGC-assisted design, 3D virtual display and try-on, and cultural empowerment, have moved from theoretical research or labs to the forefront of the clothing industry (Dai & Zhan, 2026). Therefore, the demand for professional talent at the industry’s front end has brought up new requirements, which in turn puts more pressure on practical universities to reform fashion education and drives teaching reforms. In response to industry transformation and upgrading, many universities have added “comprehensive” talent training goals in their programs, but there are still some problems. Most curricula are designed around a dual logic of “design and craft.” However, horizontal literacy courses covering sustainable concepts, market knowledge, brand management, and project management are insufficient, leading to a lack of the broad knowledge required for “T-shaped” talents (Wang, 2023). The current evaluation model, which mainly relies on single-course final assessments, lacks effective tools and tracking mechanisms to assess complex abilities like industry practice, design decision-making, and cross-domain collaboration, making it hard for teaching practices to achieve their training goals (Luo, Liu, & Zou, 2024).

At present, academia has theoretically and macroscopically elucidated the mechanism by which higher education empowers new quality productivity through human capital accumulation, technological innovation, industry-academia-research collaboration, and the upgrading of industrial structures (He & Zhang, 2025). Some scholars have proposed that T-shaped talents should possess broad and solid foundational knowledge, deep professional technical skills, and precise and proficient engineering experience (Li et al., 2014), and have emphasized that the cultivation of digital-intelligent T-shaped talents needs to be promoted synergistically from four aspects: goal orientation, curriculum system, practical teaching, and faculty team (Y. Y. Chen & P. P. Chen, 2022). In the field of fashion design education, practical explorations have already been conducted on the compound cultivation objectives of “cultural inheritance, technological application, and practical innovation,” as well as the industry-education integration model of “four-chain integration and four-in-one” (Lv et al., 2024; Feng, Qi, & Hu, 2024), which fully demonstrate the importance of cultivating fashion professionals with broad horizontal knowledge and deep vertical professional skills to adapt to the development of the industry’s new quality productivity.

This paper focuses on the practical process of competency cultivation and actual transformation links, constructing a four-in-one implementation path of “competency map-driven, curriculum matrix-supported, project chain-refined, dynamic evaluation feedback,” making the T-shaped talent model truly integrated into classrooms, aligned with projects, and serving the industry. It provides transferable practical paths and cases for the educational reform of professional competency cultivation for design talents.

The Theory and Practical Approach to Growing “T-shaped” Skills

The concept of “T-shaped talent” was first proposed by Professor Baden from Harvard Business School. The main idea was to address the need for management education to serve society—people who have a variety of skills and leadership abilities, while also being experts in a specific field. As the fashion industry demands new kinds of production, talent development also needs to meet the industry’s need for this new type of talent.

Shifting From Knowledge Input to Skill Output

There’s a certain paradigm difference between building professional skills and imparting traditional knowledge. Teaching knowledge usually follows a subject’s logical structure, focusing on the completeness and progression of concepts, and its effectiveness can be measured through standardized tests. On the other hand,

developing practical skills requires an action-oriented logic, needing a cycle of “practice, reflection, summary, and practice again” in real or simulated problem-solving situations (T. Zhang, Y. Zhang, & D. Zhang, 2015). This difference indirectly shows that T-shaped skill development can’t rely on just tweaking course content—it requires a shift in the whole teaching system.

The essence of cultivating T-shaped talents is essentially a systematic connection that goes from learning single-source knowledge and skills to acquiring broad horizontal knowledge and abilities, as well as deeply developing vertical professional skills. Specifically, a T-shaped talent development system needs to meet three conditions. First, “situational” skills must be learned in real or simulated professional contexts, rather than through abstract training detached from context. Second, “integrative” broad horizontal literacy and vertical professional skills should be embedded and complement each other; they can’t be split into separate courses, but need to develop collaboratively through the whole teaching process and practice simulations. Finally, the internalization of “reflective” professional skills is not about single, repetitive practice alone—it also requires project-based learning, guiding students to discover problems, analyze them, and apply their skills in projects, rather than just simple knowledge input, skill output (Wang, 2016).

“Four Horizontal and Three Vertical” Competency Map and Its Development Path

The “four horizontal and three vertical” capability map: The vertical depth refers to professional skills, namely creative design and trend transformation ability, digital technology application ability, and craftsmanship and pattern-making skills, which make up the technical core of the fashion profession. The horizontal breadth refers to broad industry-related cultural knowledge abilities, namely full-process product management ability, cross-field communication and collaboration ability, awareness of sustainable development, and brand-oriented design thinking, which form the four dimensions of cross-domain literacy (See Figure 1).

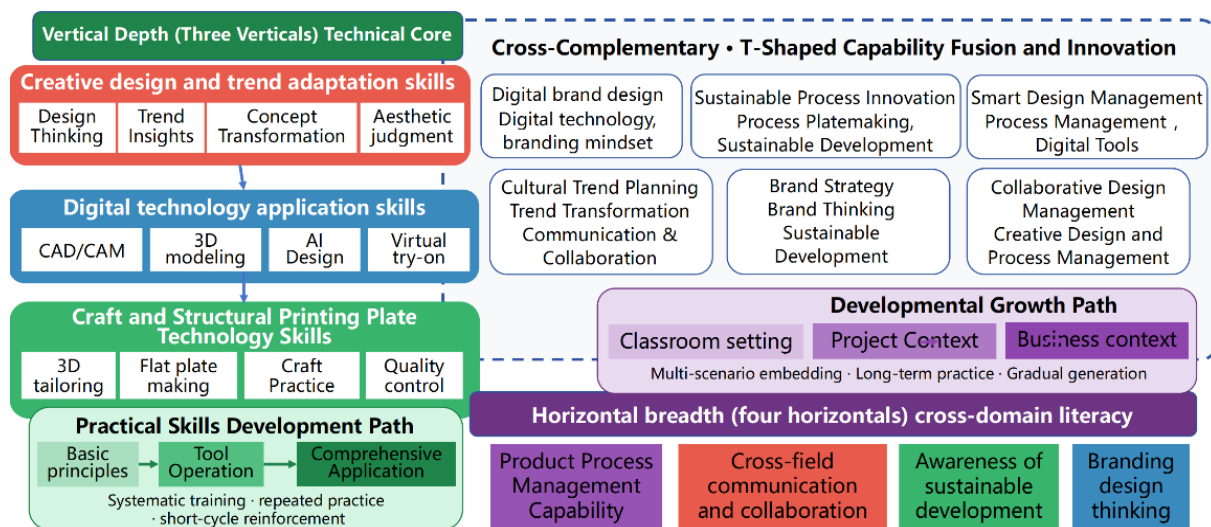


Figure 1. The “T-shaped” talent map: Four horizontals and three verticals, plus development path.

The capability map not only has the value of goal classification but also better shows the pathways for cross-training various abilities. For example, looking at professional abilities vertically, these belong to “operational skills” that can be gradually strengthened through systematic training and repeated practice. From creative design and trend ability to craftsmanship and pattern-making ability, the path is clear: just follow “Basic principles→tool operation→comprehensive application” step by step. From the horizontal dimension, these belong to

“developmental literacy,” which cannot be quickly acquired through one course or short-term training and needs to be gradually formed through multiple contexts, roles, and long-term progressive practice. Take “brand-oriented design thinking” as an example: it requires not only practical training with data tools but also comprehensive application of market research, narrative expression, and aesthetic judgment, and can only be effectively cultivated within a complete project plan. This difference means that implementing capability cultivation cannot be “one-size-fits-all.” Different training strategies should be designed for different types of abilities, and through the organic combination of course modules and practical sessions, the vertical skills and horizontal literacy can grow together.

Four-in-One Capability Development Implementation Framework

Facing the compound requirements for talent in the clothing industry brought by new-quality productivity, building a competency map is the logical starting point for a training framework. The study breaks down the “four horizontals and three verticals” competency goals step by step into observable, teachable, and assessable specific competency units, forming a mapping between “competencies, courses, and projects.” Focusing on specific competency goals, the course matrix is designed as the core vehicle to implement these competencies and support the main structure. By breaking the boundaries of single-discipline knowledge, foundational modules like fashion communication, information technology, and process management are introduced into the course modules, creating a diverse and interdisciplinary knowledge structure. For core professional courses, project-based teaching is integrated to practice and validate professional knowledge and skills. On this basis, cultural and scientific literacy, industry experience, and other elements are incorporated into course teaching. Through the modular combination of course groups covering professional skills, industry experience, and cultural literacy, the corresponding knowledge foundation and initial training for each competency are provided.

Since course learning still needs project practice to turn into transferable comprehensive skills, project chains become a necessary key step. The design includes a three-level project chain, from single-skill training to cross-course integrated projects to real enterprise projects, enabling the integration and internalization of competencies in gradually complex scenarios. Traditional course-based teaching evaluations cannot fully reflect the growth process of “T-shaped” talents. Therefore, it's necessary to combine single-course evaluation with evaluation of the whole project process, and to involve enterprises in ongoing assessment, establishing a system that combines process-based and final evaluations. Evaluation dimensions consider both horizontal interdisciplinary literacy and vertical professional skills, combining periodic progress reports, project practice, and enterprise feedback, forming a dynamic “evaluate, feedback, optimize” cycle that provides a basis for the continuous improvement of teaching and learning.

Practical Measures for Developing “T-Shaped” Talent Skills

Curriculum Plan Reconstruction

The design of cultivation programs is the primary step for integrating competency development into the teaching system. This paper takes the Clothing and Apparel Design major at Dongfang College, Zhejiang University of Finance and Economics as an example, clearly proposing that students should master skills such as clothing data research and analysis, while also being proficient in the use of intelligent digital tools, thereby responding to the demand of new-quality productivity for “T-shaped” talent capabilities. Taking the application of intelligent digital technology as an example, the program sets up a two-dimensional structure including basic

tools in “Design Software,” industrial structure design in “Clothing CAD,” virtual garment making and presentation in “Clothing 3D Design,” and frontier industry technologies in “AIGC Applications,” cultivating students’ abilities to use professional skills and intelligent digital tools to complete pattern design, style production, and trend analysis.

The cultivation of transversal competencies is difficult to achieve through a single course and requires integration with other professional and elective courses, embedding transversal teaching content and competency development into the curriculum. Taking the transversal competency of “brand-oriented thinking” as an example, the methodological foundation is primarily established in courses such as “Clothing Design Methods” and “Fashion Design Trends,” while brand awareness and design thinking are further cultivated in category courses such as “Women’s Ready-to-Wear Design” and “Men’s Ready-to-Wear Design,” ultimately integrating the entire brand process—from user research and trend analysis to brand storytelling—in the “Creative Design” course.

At the design level of the “T-shaped” talent cultivation program, it is necessary to balance the allocation of hours between vertical depth and horizontal breadth. In the redesigned program, vertical professional skill courses (such as clothing technology, flat pattern making, CAD, and 3D digital skills) account for approximately 58%, the integration of transversal competencies (such as sustainability, process management, and brand awareness modules) accounts for about 22%, and industry practice capabilities (industry practice, graduation internships, and corporate projects) account for around 20%. These three modules form a configuration with core vertical professional competencies and two wings of transversal literacy, not only retaining professional skills as the core but also leaving space for interdisciplinary competency flexibility.

Project-Based and Interdisciplinary Collaborative Curriculum Reform

The development of any skill ultimately needs to be applied in classroom teaching. This article takes the fashion design course “Clothing Craft” as an example, transforming the traditional “lecture-based” classroom into a “research-and-creation” workshop. Traditional teaching mainly involves learning the use of basic industrial sewing machines and practicing basic sewing techniques, focusing on single courses and individual skill training. The curriculum centers on learning craft techniques and lacks the cultivation of broader abilities in culture, technology, and ideological education. This course reform is based on a combination of project-based and interdisciplinary collaboration, organizing teaching around real company projects. Students follow project requirements to complete research, design, production, and competitions throughout the entire process. During this process, mentors both inside and outside the school guide the technical work, integrating course knowledge and professional skills into the project. Students learn by doing, achieving an immersive understanding of professional knowledge and techniques.

Cultivating T-shaped talents requires breaking down single-discipline boundaries and building interdisciplinary content around “fashion.” The research mainly explores areas like fashion advertising and industrial design, working together to teach functional clothing design and fashion communication. Teachers from two different disciplines handle different parts of the teaching, while students form teams to complete tasks like clothing design and promotion. At the same time, subjects like data analysis and ergonomics are integrated to study design trends from a scientific perspective, effectively achieving interdisciplinary curriculum reform. For courses like ready-to-wear design and clothing structure design, real brands and companies are used as teaching cases. The course teams, made up of mentors from both inside and outside the school, co-teach the classes, and students complete corporate tasks in groups. This approach broadens students’ practical knowledge

in areas like product development, marketing, design, and management, while enhancing their teamwork and interdisciplinary skills, as well as their ability to communicate with enterprises.

Project-Based Industry-Education Integration Practice Platform

To better evaluate the effectiveness of cultivating interdisciplinary reform talents and promote the efficient implementation of reforms, a project-based industry-education integration practice platform was developed, following a three-step approach: “basic skills, comprehensive abilities, and enterprise practice.”

For basic professional skills, core courses like sewing technology, industrial pattern making, CAD digital operations, and 3D virtual presentation tools include progressively challenging practical training sessions to strengthen students’ mastery of solid professional skills. The training process follows steps like explanation, demonstration, practice, and independent completion, combined with smart technology and platforms to provide multi-dimensional teaching support.

For comprehensive abilities, in semesters 5 to 7, modular courses such as women’s ready-to-wear design and manufacturing, men’s ready-to-wear design and manufacturing, and functional clothing are offered, requiring students to apply knowledge and skills from materials, design, pattern making, and brand analysis. Students are expected to complete the full development process from research to final garment within 8 weeks. These modular courses use a dual-mentor system combining school teachers and industry professionals, with activities like research, reports, and presentations to hone students’ overall abilities and practical application.

For enterprise practice, throughout the teaching process, real company projects are integrated into the curriculum through the school-industry collaboration platform, leveraging the modular course structure. Quarterly tasks are assigned and aligned with classroom teaching plans, forming teaching teams, with students working in project groups to implement projects from the perspective of enterprise designers. Each year, 2-3 projects are steadily collaborated on, covering areas like ready-to-wear design and development, cultural heritage creative design, fabric pattern development, children’s clothing development, and knitwear development, with students participating at a 100% rate.

Competency-Oriented Dynamic Evaluation Mechanism

Evaluation is one of the key components of talent cultivation and is also a core indicator for measuring the effectiveness of teaching reform. The current evaluation often uses the completion of a single course as the time point, which makes it difficult to effectively assess the achievement of “T-shaped” abilities and lacks tracking of the process of ability development over time. This study, combined with digital intelligence technology, constructs a diversified intelligent evaluation system that includes process records, ability demonstrations, and project feedback, providing a comprehensive assessment of learning outcomes (See Figure 2). The evaluation content covers online learning, classroom practice, project outcomes, and ideological and political performance. In terms of format, it combines dual-teacher evaluations, peer reviews, AI-generated learning profiles, and offline exhibitions, achieving a multi-subject evaluation of “teachers, students, and outcomes.” Through multi-dimensional data tracking, it accurately generates a student competency map and systematically analyzes students’ development levels across various aspects of “T-shaped” abilities. Utilizing an intelligent online teaching platform, it collects and analyzes students’ research data at different stages, product design, project presentations, mentor evaluations, revisions and improvements, forming a student competency growth portfolio that reflects their mastery of “T-shaped” talent capabilities.

Grade Breakdown	Online learning	Homework	Overall Performance	Classroom Practice	Training Results
Grade weight	15%	20%	15%	30%	20%
Review content	Professional preparation status, study duration, knowledge mastery, online discussions	Progress and results after class Homework submission, practice Advanced exploration	Attendance rate Class interaction, feedback, research practice process Participation, overall performance	Practical professional skills, application of comprehensive knowledge, expansion of cross-disciplinary abilities Company project analysis	Show the professional skills applied in the work, the transformation of cultural connotations, innovative practice ability, and marketability
Evaluation form	Collection, analysis, and feedback of platform evaluation data; dual-teacher reviews; peer reviews; AI profiling; practical showcases; ideological and political content 				
Evaluation Criteria	Broad culture, knowledge integration	Specialized Innovation , Practical Skills	Leading the industry, creating value	Innovative design and practical skills, ability to transform cultural resources, and clothing technology application skills	

Figure 2. T-shaped competency-oriented multi-modal evaluation mechanism.

Practical Results and Reflections

The content of this study has been systematically practiced in the Fashion and Apparel Design majors of application-oriented universities in Zhejiang Province. After two rounds of teaching practice, involving four classes and more than 120 students, phased results have been achieved.

The students have achieved remarkable results in competitions. According to an incomplete reform class statistics, they won 2 first prizes, 5 second prizes, and 12 third prizes in the Zhejiang Province Fashion Design Competition; 1 national first prize, 1 second prize, and 2 third prizes in the Milan Design Week, along with 20 provincial-level awards; 1 national second prize in the China Good Creativity Competition; 1 second prize in the Cross-Strait Emerging Designers Competition (Hua Can Award); 2 excellence awards in the National Integrity Cultural and Creative Competition; 1 third prize in the Zhejiang Province College Students Art Festival, totaling over 30 awards at the provincial level or above. Innovation and entrepreneurship projects, as well as scientific research projects, have shown significant growth. Based on cultural heritage and innovative development, the students won 3 national-level and 7 provincial-level awards in the College Students Innovation and Entrepreneurship Competition, completed 12 college-level research projects, produced 14 research papers, and published 3 papers publicly. Since 2020, students' project practice abilities have been effectively enhanced by leveraging regional economic, cultural, and technological advantages, guiding students to conduct local cultural exploration and innovation, e-commerce entrepreneurship, digital technology applications, etc., with project categories covering entrepreneurial communication, heritage preservation, and technological innovation. Over the years, course evaluations have averaged above 96 points, and teaching reform feedback has been positive. In terms of professional development contribution, the fashion major boasts a 100% employment rate. Teaching achievements have been showcased in university, district, and national exhibitions. Among the faculty team, 2 hold national pattern-making certificates, 75% are dual-qualified teachers, and all have held positions in enterprises, with multiple provincial-level honors awarded.

While this reform has achieved phased results during its implementation, it has also revealed problems to varying degrees that deserve further scrutiny. Firstly, the structural shortcomings of the teaching team have become one of the key constraints to deepening the reform. Secondly, the sustainability of interdisciplinary

collaborative teaching faces systemic difficulties. Interdisciplinary course resources and teaching rely heavily on individual teachers' capabilities, lacking effective mechanisms for coordination. The main reason for the above issues lies in the cultivation of “T-shaped” talents, which requires mobilizing various teaching resources and places different demands on all parties. This is one of the crucial aspects where continuous deepening and optimization adjustments of the reform are needed.

Conclusion

This paper, based on the reform practices of the Apparel and Accessories Design major in application-oriented universities, validates the four-in-one competence cultivation framework of competency map, course matrix, project practice, and diversified evaluation. Theoretically, it transforms the four horizontal and three vertical new-quality talent competence framework from map design into dynamic implementation and pathways, clearly demonstrating the organic integration of horizontal breadth and vertical depth. Taking the Apparel and Accessories Design major of this university as an example, the study reconstructs the cultivation program, reforms core professional courses, and implements practical applications. The reform data and results indicate that, after the reform, students' horizontal knowledge literacy, vertical professional technical abilities, and adaptability to enterprise practice have significantly improved. With the continuous emergence of AIGC design tools, 3D virtual technologies, and the like, the competence cultivation in application-oriented university majors also needs to establish a dynamic updating mechanism to maintain flexibility and sensitivity to industry changes. This research, being competence-oriented and course-supported, forms a dynamic and transferable practice program through project practice and evaluation feedback, continuously iterating and upgrading. It enables talent cultivation to become a strong support for new-quality industrial development, rather than passive following and catch-up.

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