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Reflection and Exploration on the Talent Cultivation Model of Vocational Undergraduate Packaging Major under the Background of New Quality Productivity

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Abstract: What kind of people should vocational undergraduate packaging major cultivate, how to cultivate them, and how to build a distinctive talent cultivation model are important issues that urgently need to be explored and researched. Various research methods, such as literature analysis, survey questionnaires and face-to-face interviews, were used to explore and study the talent cultivation model of packaging major in vocational undergraduate education. Vocational undergraduate packaging major should build a curriculum system based on the design philosophy of career orientation, product thinking, integration of art and technology, integration of design and engineering, integration of theory and practice and competency-based education through approaches such as deep industry-education integration and the integration of job requirements, courses, competitions and certificates. A dual teacher teaching team with professional technical and practical abilities, educational and teaching abilities, cross-border integration and innovation abilities, and self-development abilities should be constructed. Various teaching methods including project-based teaching, product-oriented practical training, competition-based practical training, practice-oriented assessment, and the construction of smart teaching environments should be adopted to continuously deepen the Three Teachings Reform. It aims to cultivate high-level technical and skilled talents with strong professional competence, methodological abilities, digital literacy, innovation capability, organizational leadership, and sustainable development capacity—talents who can take root in the packaging industry, drive its sustainable development, and achieve all-round development in morality, intelligence, physical education, aesthetics, and labor education. The research results can provide reference and guidance for the establishment and implementation of the talent cultivation model for packaging major in vocational undergraduate education nationwide.

Keywords: New Quality Productivity; Vocational Undergraduate; Packaging Major; Talent Cultivation Mode

1. Research Background

Vocational education, as the type of education most closely aligned with industries and most directly serving economic and social development, has played an essential role in providing human resources at different stages of China's productivity development. It has expanded China's workforce and optimized its structure. [1]. According to the latest Catalogue of Vocational Education Majors (2021) issued by the Ministry of Education, there are three packaging-related majors in vocational education: the Packaging Design and Production program at the secondary vocational level, the Packaging Planning and Design program at the higher vocational (college) level, and the Packaging Engineering Technology program at the undergraduate vocational level. Over the past forty years, China's vocational education in packaging has cultivated a large number of technical and managerial professionals, continuously contributing to the advancement of the industry.

As an important component of the modern industrial system, the packaging industry is a service-oriented manufacturing sector closely linked to the national economy and people's livelihoods. It also serves as a key support force for developing new quality productive forces and achieving high-quality economic and social development. According to the China Packaging Industry Development Plan (2021–2025), by the

end of the 14th Five-Year Plan period, the total output value of China's packaging industry is expected to exceed 3 trillion RMB yuan, accounting for approximately 2.5% of the national GDP. The packaging industry is a sunrise industry characterized by a large market scale, diverse applications, and broad development prospects. However, the packaging industry is also a complex and lengthy system that encompasses multiple stages: packaging planning, packaging design (structure, form, graphics, and decoration), packaging production and manufacturing (materials, printing and post-press processes, equipment, etc.), packaging testing, packaging circulation (storage, logistics, sales, and use), packaging waste treatment, and recycling. Traditional packaging products primarily serve the basic functions of protecting goods, facilitating transport, and simple promotion, occupying the lowest value position within the supply and industrial chain. Furthermore, due to the low level of integration in China's packaging sector, the industry faces prominent issues of homogenization, low-level and low-price competition, and serious overcapacity. The wide variety of packaging materials, products, and equipment—with differing forms and uneven standards—adds to the challenge of standardization. At the same time, brand owners are increasingly demanding faster delivery and lower procurement costs, placing pressure on packaging enterprises to reduce costs, increase efficiency, improve quality, and manage inventory reduction. Additionally, the introduction of major national policies such as the "Dual Carbon Strategy" (carbon peaking and carbon neutrality) and the "Plastic Restriction and Ban Orders" has posed new challenges for green transformation within the packaging industry [2].

Therefore, key questions have emerged for domestic packaging enterprises: how to leverage new-generation information technologies and advanced technologies to reduce costs, improve efficiency, enhance quality, and control inventory; how to increase the added value of packaging and strengthen its role within the supply and industrial chains; and how to adapt to the challenges of green transformation to achieve sustainable development. The packaging industry is currently undergoing transformation toward intelligentization, digitalization, greenization, functionalization, and personalization, exhibiting increasingly interdisciplinary and cross-sector integration characteristics.

New quality productive forces are characterized by innovation-led development that breaks away from traditional models of economic growth and productivity evolution. They feature high technology, high efficiency, and high quality, embodying an advanced form of productivity consistent with the principles of the new development paradigm. Their essence lies in the upgrading and optimized combination of labor, tools of labor, and objects of labor, with a substantial increase in total factor productivity as the core indicator. As noted in the People's Daily article titled "The Connotation, Characteristics, and Development Focus of New Quality Productive Forces" published on March 1, 2024, it is essential to promote the effective integration and coordinated development of education, science and technology, and talent cultivation to build a new type of workforce compatible with the development of new quality productive forces [3].

The evolution of new quality productive forces and the transformation and upgrading of the packaging industry have introduced new challenges and requirements for talent cultivation in the packaging discipline. As an undergraduate-level form of vocational education, the vocational bachelor's degree in packaging must confront fundamental questions—what kind of talents to cultivate, how to cultivate them, and how to construct a distinctively typified talent cultivation model. The goal is to realize a transformation from a focus on "educational level" to a focus on "educational type," thereby promoting the development of new quality productive forces within the packaging industry and achieving high-quality and sustainable development. This is an urgent and significant topic requiring in-depth exploration and research.

2. Overall Framework of the Talent Training Model for the Vocational Undergraduate Packaging Major

The construction of the talent training model for the vocational undergraduate packaging program must answer three fundamental questions. The first is what kind of people to cultivate, which includes the objectives and specifications of talent training. The second is how to cultivate people, which involves what to teach (curriculum and materials), who teaches

(teachers), and how to teach (methods and pedagogy). The third is how the cultivated individuals perform, which relates to the evaluation of training quality—specifically, who conducts the evaluation and how it is carried out.

Figure 1 illustrates the overall framework of the vocational undergraduate packaging program's talent training model. This paper focuses on the first two questions in detail, while the third will be discussed in future research.

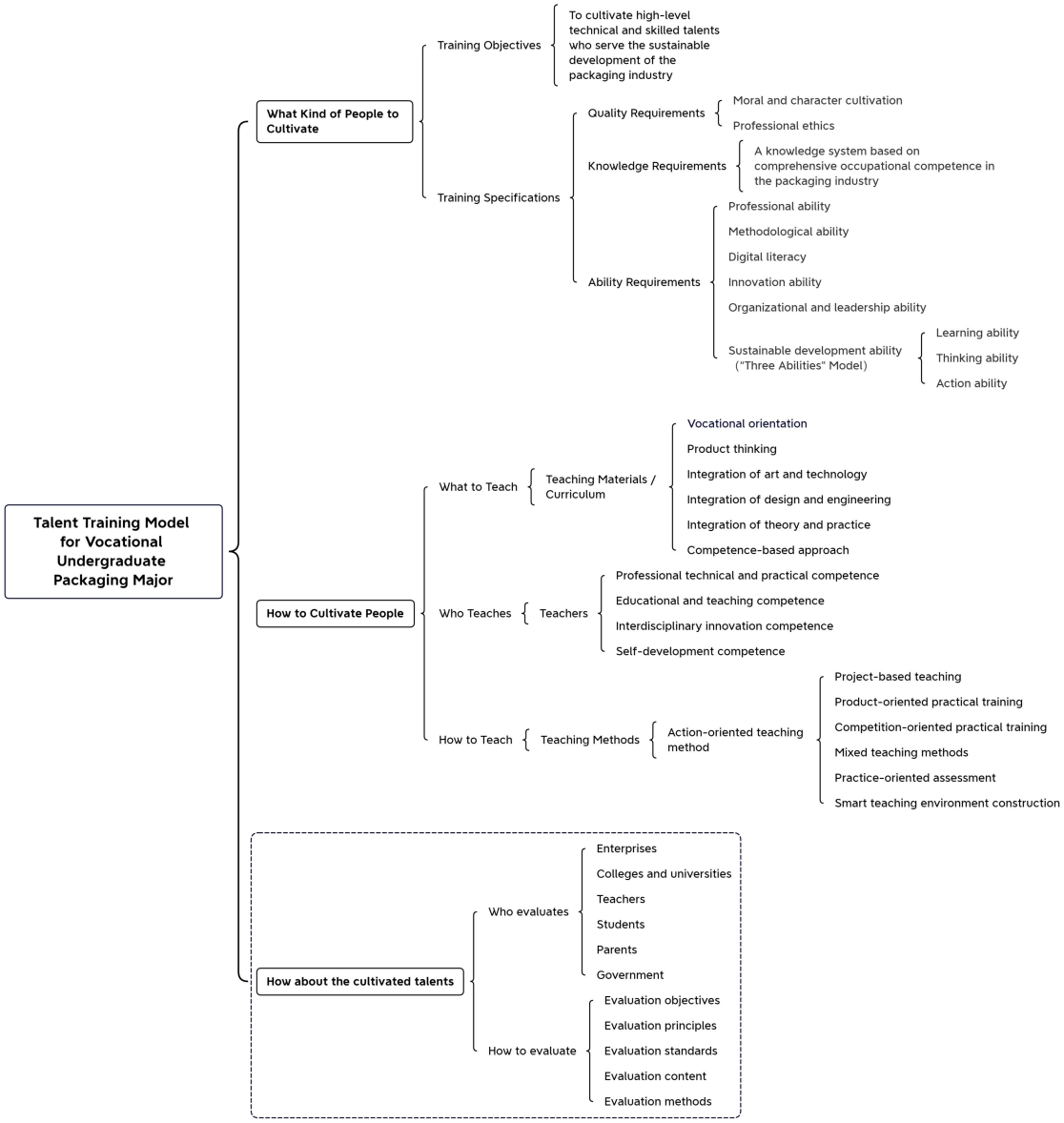

Figure 1. Overall Framework of the Talent Training Model for the Vocational Undergraduate Packaging Major

3. What Kind of People Should Cultivate for the Vocational Undergraduate Packaging Major

3.1 Talent Training Objectives

According to the Administrative Measures for the Establishment of Undergraduate-Level Vocational Education Majors (Trial) issued by the Ministry of Education, vocational undergraduate education should "adhere to the positioning of cultivating high-level technical and skilled talents." This clarifies that, from a type perspective, vocational undergraduate education aims to cultivate technical and skilled talents, while from a level perspective, it aims to cultivate high-level talents. Vocational undergraduate education combines both vocational orientation and higher education attributes. Balancing these two aspects is essential for highlighting the distinctive characteristics of this educational type. Fundamentally, vocational undergraduate education is vocational education. Its vocational

nature is both the genetic attribute of this educational type and its key advantage that differentiates it from and allows coexistence with general and applied undergraduate education. On the foundation of its vocational orientation, vocational undergraduate education must also reflect the higher-level standards of undergraduate education. Compared with general and applied undergraduate education, vocational undergraduate education is profession-oriented rather than discipline-oriented, and vocationally directed rather than academically directed. Compared with vocational college (associate-level) education, vocational undergraduate education emphasizes higher-level capabilities—including professional orientation, technical skills, theoretical foundation, and professional competence [4–6].

Therefore, the talent training objective of the vocational undergraduate program in packaging can be defined as follows: To serve high-end sectors and occupational clusters of the packaging industry, the program aims to cultivate high-level technical and skilled professionals who possess strong patriotic commitment and a sense of responsibility for national rejuvenation. These individuals should be capable of engaging in packaging product planning and design, development and production, testing and quality control, marketing promotion, and operations management. They should be able to solve complex technical problems and perform advanced operational tasks in packaging engineering. Moreover, they should demonstrate professional competence, methodological literacy, digital proficiency, innovative thinking, organizational and leadership skills, and sustainable development capability. Such individuals are expected to remain rooted in the packaging industry, contribute to its sustainable growth, and achieve well-rounded development in moral, intellectual, physical, aesthetic, and labor education.

3.2 Talent Training Specifications

3.2.1 Quality requirements

The talent cultivation of the vocational undergraduate packaging program must always adhere to the fundamental mission of fostering virtue through education. It should cultivate students with firm ideals and beliefs, profound patriotism, and a strong sense of national pride; with an optimistic, resilient, composed, and broad-minded psychological makeup; with a spirit of craftsmanship characterized by dedication, perseverance, meticulousness, and pursuit of excellence; and with noble moral character, a strong sense of social responsibility, good humanistic literacy, and refined aesthetic taste.

3.2.2 Competency requirements

The author believes that students in the vocational undergraduate packaging program should possess at least six core competencies: professional competence, methodological competence, digital literacy, innovative ability, organizational and leadership ability, and sustainable development ability. As shown in Figure 2, these constitute the competency model for talent cultivation in the vocational undergraduate packaging program. Among them, professional competence is the foundation—cultivating students' ability to comprehensively apply professional knowledge, technology, and skills to complete complex tasks. Methodological competence is the guarantee—cultivating students' ability to acquire new knowledge, learn new technologies, and solve emerging problems, such as learning research and analytical methods, identifying and investigating problems, and applying interdisciplinary knowledge to solve them. Digital literacy serves as the support, fostering students' abilities in data acquisition, creation, application, evaluation, interaction, sharing, innovation, security assurance, and ethical practice. This also reflects the new requirements for talent imposed by the digital and intelligent transformation of the packaging industry and the digital economy. Innovative ability is the advantage—cultivating students' capacity to utilize professional knowledge, skills, and experience to carry out technological innovation and transform scientific achievements. Organizational and leadership ability is the distinguishing feature—developing students' communication, coordination, and decision-making abilities in teamwork. Sustainable development ability is the foundation—cultivating students' abilities in career planning, innovation, self-improvement, and social adaptability.

Regarding sustainable development ability, the author emphasizes that education is a cause for the future, cultivating the next generation of builders and successors. The vocational

undergraduate packaging program should also be oriented toward the future, cultivating talents capable of leading the sustainable development of the packaging industry. However, the future world is full of diversity and uncertainty. Future leaders must have strong patriotic feelings and a sense of responsibility for national rejuvenation, combining scientific literacy with humanistic sensibility, integrating historical awareness with an exploratory spirit, and possessing critical thinking and effective communication skills. Only individuals who simultaneously possess learning power (including self-learning, rapid learning, and lifelong learning), thinking power, and action power—the "three powers"—and embody the "three innovations" (innovation, creation, and entrepreneurship) can lead the future [7].

Figure 2. Competency Model of Talent Cultivation Specifications for the Vocational Undergraduate Packaging Major

Under the background of the packaging industry's transformation toward intelligentization, digitalization, greening, and integration, and the pursuit of sustainable development, students in the vocational undergraduate packaging program should possess professional abilities including, but not limited to, the following:

They should be able to research and analyze user behavior and needs throughout various stages—cognition, attitude, motivation, choice, decision-making, purchase, and use—to provide information support for creative packaging design and development; they should be able to conduct creative design for packaging structure, form, decoration, and process based on market, user, and client needs, from a full life-cycle perspective; they should be able to carry out engineering planning for packaging materials and processes based on creative design proposals to optimize product performance, quality, and cost; they should be able to select appropriate packaging materials according to the characteristics and nature of the packaged goods (or products), the circulation environment, client needs, and legal or regulatory requirements, while comprehensively considering manufacturability, cost, and environmental benefits; they should be able to select appropriate testing methods and instruments according to relevant domestic and international standards, to scientifically test and evaluate the performance of packaging materials and products, and to write qualified testing reports providing data support for optimizing packaging design and engineering planning; they should be able to apply integrated intelligent packaging data perception interfaces, including variable information anti-counterfeiting codes, image recognition marks, intelligent labels/displays/energy devices, and smart sensors; they should be able to plan and design digital marketing solutions for intelligent packaging aimed at enhancing client brand influence and marketing performance, and to design and develop digital content such as H5 pages, 3D animations, and videos based on these solutions; they should be able to design and develop image recognition software (such as code recognition software or AR software) and WeChat mini-programs based on intelligent packaging solutions; they should be able to design and plan the basic architecture of intelligent packaging big data platforms, implement hardware deployment, manage servers and databases, and perform daily operations; they should also be able to mine, process, and analyze big data to provide data reports that support enterprise activities in design, R&D, production, warehousing, logistics, and marketing; they should have the ability to design, develop, and upgrade new green and functional packaging materials based on market, client, and policy requirements; and they should have the ability to design, develop, and optimize automation and digital transformation for existing packaging equipment and to develop new intelligent packaging machinery according to manufacturing needs.

3.2.3 Knowledge requirements

The knowledge requirements for students in the vocational undergraduate packaging program should be based on the integrated occupational competencies of packaging industry clusters and

job groups (see Figure 2), which directly determine the design of the program's courses and teaching materials (to be discussed below). The author believes that students in this program should master professional knowledge including, but not limited to, the following:

They should master common methods for market, user, and product demand research and analysis, and be familiar with packaging marketing and planning knowledge; be familiar with Chinese traditional culture, regional cultures, modern trends, and world multiculturalism; be familiar with brand-related knowledge, including brand definitions, connotations, values, management, and communication; understand national policies, laws, regulations, and standards related to the profession; master packaging structure design, form design, and decoration design; be familiar with polymer materials, polymer physics, polymer chemistry, and biomimetic materials science; master the composition, properties, manufacturing methods, and applications of common packaging materials, as well as the principles and methods for evaluating and testing packaging materials, containers, and transport packages; be familiar with the principles, methods, and processes of common packaging technologies, including printing, post-press, and surface finishing processes; be familiar with the design and development of intelligent packaging equipment; master packaging cost accounting knowledge; be familiar with the integration and application of intelligent packaging data perception interfaces, including variable information anti-counterfeiting codes, image recognition marks, intelligent labels/displays/energy devices, and smart sensors; be familiar with programming languages (object-oriented, Python, Java, etc.) and Android/iOS mobile application development; be familiar with intelligent packaging interactive digital media development (such as H5 design, UI design, and animation design); and be familiar with statistics, databases, data mining, and data analysis.

4. How to Cultivate Talents for the Vocational Undergraduate Packaging Major

Vocational undergraduate packaging education should focus on the deep integration of industry and education and the integration of work, course, competition, and certification. It should also promote the "Three Teachings Reform" — teachers, teaching materials, and teaching methods — as an entry point and breakthrough for deepening the connotation of education and improving teaching quality. This approach aims to build a high-level talent cultivation system and promote the high-quality development of vocational undergraduate education in packaging [8–10].

4.1 What to Teach (Courses / Teaching Materials)

Vocational undergraduate packaging education should embody its undergraduate level while maintaining its vocational nature. Upholding vocational orientation means developing curricula based on the occupational (work) system rather than the academic system, constructing an application- and practice-oriented curriculum system centered on the cultivation of comprehensive professional competence (see Figure 2). Reflecting the undergraduate level means deepening the study of technical theories, strengthening innovation capacity development, and enhancing research-based practical training.

The packaging discipline is an interdisciplinary and cross-domain field characterized by a dual nature of art and engineering. Therefore, in curriculum design and development, it should emphasize the integration of art and technology and the fusion of design and engineering. As mentioned earlier, the packaging industry is a complex and lengthy system involving multiple stages — packaging planning, design, production, testing, circulation, waste management, and recycling. It comprises three main categories (packaging materials, packaging products, and packaging equipment) and five sub-industries (paper, plastic, metal, glass/ceramic, and bamboo/wood packaging). The professional and technical knowledge involved is extensive and diverse. Thus, to systematize such content in the curriculum and enable students to learn in an integrated rather than fragmented manner, the author believes that designing courses from a product-oriented perspective, with the mindset of a product manager, is a suitable approach. Students should be trained as packaging product managers, learning to understand packaging comprehensively and systematically from the perspective of the entire packaging life cycle — exploring the relationships between packaging and product, packaging and user, packaging and

brand, packaging and culture/art, packaging and technology, packaging and environment, packaging and lifestyle/health, and packaging and the supply/industry chain. They should analyze market and customer needs and integrate design, materials, processes, equipment, performance, functionality, cost, application scenarios, and user experience. This enables them to conceptualize, develop, and produce packaging products that meet market and customer expectations through holistic, solution-oriented thinking.

Based on the above analysis, we propose the curriculum design concept for the vocational undergraduate packaging program as "vocational orientation, product thinking, integration of art and technology, integration of design and engineering, theory-practice coherence, and competence-based education", as shown in Figure 3.

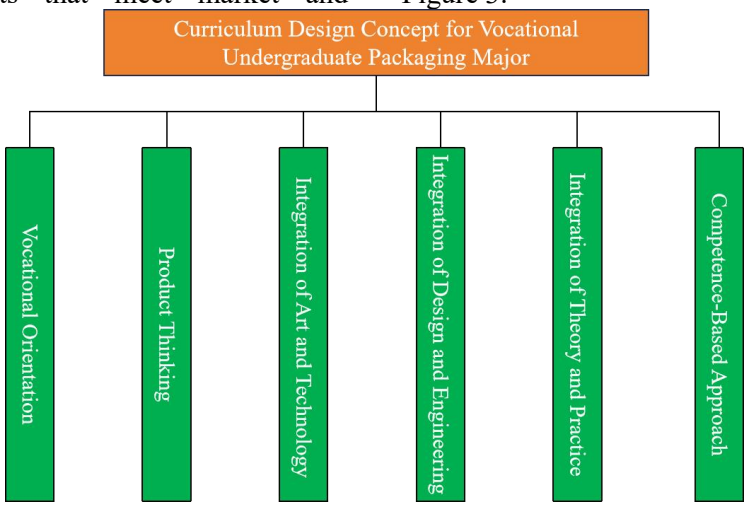

Figure 3. Curriculum Design Concept for the Vocational Undergraduate Packaging Major

The author emphasizes that when designing the curriculum for the vocational undergraduate packaging program from a product perspective and through the lens of a product manager, several aspects should be considered: (1) Ensure typicality in product selection so that the chosen products are representative of the industry and enterprise production, integrating the program's core technical knowledge to ensure the systematic and complete acquisition of technical knowledge. (2) Ensure progressiveness in product selection — as the technical integration and comprehensiveness of the products increase, the curriculum's depth and difficulty should also increase, allowing students' learning and professional growth to progress spirally. (3) Ensure timeliness, relevance, and interest in product selection to stay aligned with the technological development trends of the packaging industry. (4) Conduct production process analysis for the selected products, including process flow, task description, technical and skill requirements, and technical standards, to ensure the curriculum's occupational relevance. (5) Reconstruct the knowledge and competency structure based on the production process, considering the interconnection of work tasks and the progression of skill levels. Design corresponding course or teaching modules to form a coherent curriculum system, ensuring logical and systematic technical knowledge.

The curriculum system of the vocational undergraduate packaging program is recommended to include four main categories — general education courses, professional foundation courses, professional core courses, and professional extension courses, supplemented throughout by comprehensive practical courses. Specifically (including but not limited to):

(1) General Education Courses: Ideological and Moral Education and Rule of Law, Current Affairs and Policies, Military Theory and Skills, Physical Education and Health, College Mental Health Education, Safety Education and Emergency Response Training, Career Planning and Employment Guidance, Labor Education and Social Practice, Applications of Artificial Intelligence, Creative Thinking, Information Literacy, Public Foreign Language, College Chinese, Advanced Mathematics (Statistics, Linear Algebra, Probability and Mathematical Statistics), College Physics, College Chemistry, and Programming Languages.

(2) Professional Foundation Courses:

Introduction to Packaging, Fundamentals of Packaging Design, Packaging Image Acquisition, Applied Mechanics in Packaging, Polymer Materials Science, Digital Image Processing, Fundamentals of Mechanical Design, and Embedded Systems Design and Development.

(3) Professional Core Courses: Packaging Structure Design, Packaging Form Design, Packaging Decoration Design, Packaging Planning and Marketing, Packaging Materials and Testing Applications, Packaging Printing and Post-Press Processing Technology, Printed Electronics Technology, Intelligent Packaging Design I (Structure/Material-Oriented), Intelligent Packaging Design II (Information-Oriented), Packaging Machinery Design and Automation, and Packaging Cost Accounting.

(4) Professional Extension Courses: Interactive Design and Development for Intelligent Packaging Digital Media, Intelligent Packaging Big Data Mining and Analysis, Computer-Aided Packaging Design (Packaging Design and AI), Transport Packaging Design, Packaging Design for Special Products, Integrated Design and Manufacturing of Intelligent Packaging, Packaging Enterprise Management, and Packaging Social Service and Application Topics.

4.2 Who Can Teach (Teachers)

It is essential to explore and establish a standard and management mechanism for cultivating "dual-qualified" teachers in the vocational undergraduate packaging program, continuously improving the dual-professional competence of full-time faculty members. The vocational undergraduate packaging program is an interdisciplinary and cross-domain field that encompasses knowledge from multiple disciplines, including art, design, mathematics, physics (including mechanics), chemistry, biology, light industry technology and engineering (packaging engineering, printing engineering), materials science and engineering, mechanical engineering, control science and engineering, optical engineering, information and communication engineering, computer science and technology, electronic science and technology, and resources and environment. Therefore, the composition of the "dual-qualified" teaching team should be appropriately structured around the above disciplinary backgrounds.

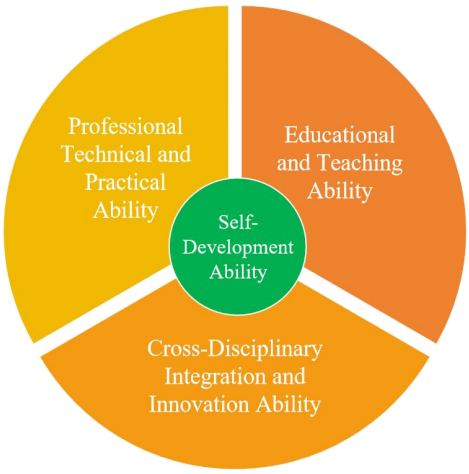

Figure 4. Competency Requirements for Teachers in the Vocational Undergraduate Packaging Major

As a vocational education program at the undergraduate level and a professional education type within undergraduate education, the vocational undergraduate packaging program presents new challenges and demands for teacher competencies. The author believes that teachers in this program should possess at least four key competencies: professional technical and practical competence, educational and teaching competence, interdisciplinary innovation competence, and self-development competence, as shown in Figure 4. (1) Professional Technical and Practical Competence: Teachers of vocational undergraduate packaging programs must not only have a profound understanding of technical theories in packaging and related fields but also possess strong innovative and practical guidance abilities. (2) Educational and Teaching Competence: Teachers must adhere to the principles of vocational education, respecting students' diversified and individualized learning paths, while integrating pedagogical theories from general undergraduate education to design, implement, reflect upon, and optimize teaching practices, thereby continuously improving their teaching capacity. (3) Interdisciplinary Innovation Competence: Teachers should be capable of integrating knowledge from multiple disciplines and industrial fields to engage in innovative R&D of new materials, new processes, and new equipment, as well as in the transformation of scientific and technological achievements. (4) Self-Development Competence: In a rapidly evolving world marked by diversity, uncertainty, and exponential technological progress, teachers

must constantly update their knowledge systems and enhance their overall qualities and abilities to adapt to the changing industrial, corporate, and market environments and to meet the evolving requirements for cultivating high-level technical and skilled professionals.

4.3 How to Teach (Teaching Methods)

Since the courses of the vocational undergraduate packaging program are designed for industry-related occupational groups and job clusters—developed around real products and based on the perspective of a product manager, the teaching methods should adhere to an action-oriented approach. This includes, but is not limited to, the following methods (see Figure 5):

(1) Project-Based Teaching: Transform real commercial projects from packaging enterprises into classroom projects, turning the classroom into a product development workshop. (2) Product-Oriented Training: Introduce actual packaging product development requirements into classroom teaching, allowing teachers and students to collaboratively engage in product design and development. (3) Competition-Based Training: Convert competition topics from international and national packaging skill competitions into training projects for hands-on, practice-based learning using real-world challenges. (4) Blended Teaching Methods: Depending on teaching objectives and course content, flexibly apply various methods such as lectures, group discussions, case-based learning, visual demonstrations, role-playing, task-driven learning, field research, on-site observation, corporate visits, and exhibition tours. (5) Practical Assessments: Evaluate students according to real packaging enterprise standards for design, development, and production. Innovative assessments—such as prototype design presentations or project roadshows—can also be incorporated, with joint evaluations by technical and business experts. This encourages students to think critically about how to transform their academic knowledge into practical productivity that serves industrial development, thereby enhancing their innovative thinking, business acumen, and communication skills. (6) Smart Teaching Environments: Utilize next-generation information technologies—such as artificial intelligence, the Internet of Things (IoT), mobile internet, big data, cloud computing, VR/AR, 3D holography, digital twins, and 5G—to build intelligent teaching environments. Develop flexible teaching resources such as modular textbooks, work manuals, multimedia teaching materials, digital textbooks, and virtual simulation tools to create immersive, interactive, and experiential learning experiences. Promote inquiry-based learning, blended learning, and flipped classrooms, driving the shift from teacher-centered to student-centered education, and from content-oriented to process-oriented pedagogy.

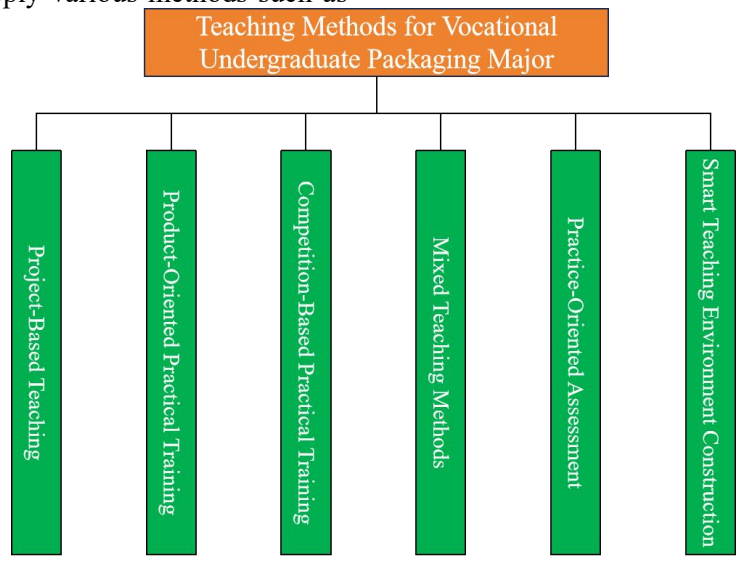

Figure 5. Teaching Methods for the Vocational Undergraduate Packaging Major

5. Conclusion

The vocational undergraduate packaging program should achieve deep integration of industry and education, and connectivity among work, course, competition, and certification. It should construct a curriculum system guided by the design philosophy of "vocational orientation,

product thinking, integration of art and technology, integration of design and engineering, coherence between theory and practice, and competence-based learning." Furthermore, it should build a teaching team with strong professional technical and practical competence, teaching competence, interdisciplinary innovation ability, and self-development capability. By employing diverse teaching methods such as project-based teaching, product-oriented training, competition-based training, practical assessments, and the creation of smart learning environments, the program can continuously deepen the "Three Teachings Reform" and cultivate high-level technical and skilled professionals. These individuals should possess a deep sense of patriotism, a strong sense of responsibility for national rejuvenation, and be capable of engaging in packaging product planning and design, development and production, testing and quality control, marketing and operations management. They should be able to solve complex packaging engineering and technical problems, execute intricate operations, and demonstrate professional competence, methodological ability, digital literacy, innovation capability, organizational leadership, and sustainable development capacity. Ultimately, such talents will take root in the packaging industry, promote its sustainable development, and achieve all-round development in morality, intelligence, physique, aesthetics, and labor, thereby meeting the demands of new productive forces and the transformation of the packaging industry toward digitalization, intelligence, greening, and integration.

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