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New Quality College Students from the Perspective of New Productive Forces: Connotation, Characteristics and Transformation of Cultivation Paradigms

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Abstract

In the context of profound economic and social transformation driven by new productive forces, this article proposes the core concept of "new quality college students" to address the urgent need for strategic adjustments in the talent development paradigm of higher education. The present study firstly analyses the connotations of new productive forces and its core requirements for human capital, i.e. innovation, versatility, strategic thinking and adaptability. Moreover, it systematically defines the core concept of "new quality college students" and summarizes their four defining characteristics. The article's core argument focuses on how new productive forces can fundamentally drive a profound paradigm shift in higher education across training objectives, curriculum systems, teaching models, evaluation mechanisms, and governance ecosystems. This article proposes a training system for college students that is intended to produce a new type of student. This system is based on a "concept-pathway-guarantee" framework. This study takes a three-pronged research approach: "theoretical construction, practical analysis, and innovative approaches". The aim of this framework is to provide theoretical guidance and a practical framework for building a future-oriented, world-class higher education system with Chinese characteristics. At the same time, it makes beneficial contributions to the theoretical and practical exploration of higher education worldwide.

Keywords

New Productive Forces, New Quality College Students, Talent Cultivation Paradigm, Higher Education Reform

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Introduction

Background of the Study and Problem Statement

We are at a historical intersection where the global landscape is being reshaped by a technological revolution and industrial transformation. To seize the commanding heights of future development, China has made strategic arrangements to accelerate the development of new productive forces. New productive forces, characterized by "high technology, high efficiency, and high quality" (Xi, 2024), is a state of advanced productivity dominated by scientific and technological innovation and achieving a leap in key factors. Not only is it the core engine for promoting high-quality economic development, it is also the fundamental driving force for profound changes in social production relations, the labor market and human capital demand. Against this macro backdrop, where science and technology are the primary drivers of productivity, talent is the primary resource, and innovation is the primary catalyst, higher education is confronted with unparalleled strategic challenges and opportunities.

However, the "adaptability gap" between the traditional higher education talent training model and the new development pattern is becoming increasingly apparent. Firstly, knowledge lag is a serious problem, with the existing curriculum system unable to keep up with the rapid pace of disruptive technology (Schwab & Samans, 2016). Secondly, there is a structural mismatch between training and demand. The overly detailed division of disciplines and majors results in a limited knowledge base for talent, making it difficult to meet the urgent need for new productive forces in interdisciplinary and compound talent (World Economic, 2023). Thirdly, the single evaluation mechanism, which is dominated by scores and knowledge recall, struggles to effectively identify and motivate students' innovative spirit, critical thinking, and complex problem-solving abilities (Zhao, 2012). These issues all highlight a fundamental question: What kind of people should higher education cultivate in the context of new productive forces? And how can systematic changes be implemented to achieve this?

In this regard, this article introduces the core concept of "new quality college students" in an attempt to address the fundamental question of "what kind of people should be cultivated" from a theoretical standpoint. This concept is not simply a replacement for "outstanding college students", but specifically refers to future creators who can actively adapt to, support and lead the development of new productive forces. These individuals have an internal drive for innovation, a deep and complex knowledge structure, a strategic and forward-looking vision, and dynamic adaptability. A systematic explanation of the connotations and characteristics of this group will provide the answer to "how to cultivate people" — that is, a paradigm shift in the way talent is cultivated in higher education.

Literature Review

Firstly, research on new productive forces is still in its early stages. Most existing studies explore its theoretical origins (Xu & Li, 2025), core characteristics (Hutao, 2024), and implications for macroeconomics and industrial policies. However, most studies focus on economic and management perspectives. There is a lack of literature that deeply analyses the inherent talent requirements of new productive forces from an educational perspective, particularly from the micro-human capital dimension. This provides a starting point for this study.

Secondly, research on future talent and educational reform has produced substantial results. Internationally, the World Economic Forum has repeatedly emphasized the importance of equipping future generations with the skills to solve complex problems, think critically, and be creative (World Economic, 2023). The education community has widely explored innovative models such as 21st-century core literacy (Kereluik et al., 2013), project-based learning (PBL) and STEM/STEAM education. Domestic scholars have also conducted in-depth discussions on cultivating innovative talent (Dai et al., 2025)and constructing "new engineering" and "new liberal arts". While these studies provide an important foundation for this research, their conceptual systems (e.g. “innovative talents”and “digital talents”) often focus on one aspect of talent and lack an integrated framework that can address the comprehensive and systematic requirements of new productive forces.

A review of the above literature reveals two obvious gaps in existing research. First, research on new productive forces lacks consideration of pedagogy at a micro level. Second, discussions of future talent do not engage directly and systematically with the new productive forces strategy. Therefore, this article innovates by:Theoretical concept innovation: for the first time, the concept of “new quality college students” is clearly defined and explained in detail, providing a concise and powerful theoretical tool for understanding the specifications required for talent in the context of new productive forces.Innovation in research perspective: revealing the inherent logic of the “drive-response” relationship between new productive forces and higher education talent training and connecting the macro national strategy with micro-level education and teaching reform. Path construction innovation: Moving beyond scattered strategic recommendations, it builds a holistic reform framework covering goals, curriculum, teaching, evaluation and ecology from the perspective of “paradigm change”.

Methodology

This study takes a three-pronged research approach: "theoretical construction, practical analysis, and innovative approaches". Firstly, it provides a thorough interpretation of the connotations of ne new productive forces and its talent requirements, thereby establishing a theoretical foundation for the concept of “new quality college students”. Secondly, it systematically expounds on the connotations and typical characteristics of “new quality college students”, clearly depicting the new objectives of talent cultivation. Third, guided by these goals, it demonstrates the necessity of a paradigm shift in higher education driven by new-quality productivity across five dimensions: training objectives, curriculum, teaching models, evaluation mechanisms and governance ecosystems. Finally, it proposes a systematic approach to talent cultivation.

Utilizing theoretical and speculative methods, the paper will philosophically analyze and construct core concepts. Through literature analysis, it will systematically review and critique relevant Chinese and foreign literature. Through comparative and case studies, it will draw on cutting-edge practices from domestic and international universities in interdisciplinary talent development and innovative teaching models, thereby enhancing the persuasiveness and foresight of its arguments.

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Results and Discussion

The Foundation of Theory: The Core Connotation of New Quality Productive Forces-Qualitative Change Driven by Factor Innovation

New productive forces is not a sudden concept, but the latest qualitative state of productivity under the impetus of the wave of scientific and technological revolution. To accurately understand the new requirements, it puts forward for talent training in higher education, we must first seek answers from the profound changes in its theoretical core and constituent elements.

The core connotation of new productive forces: qualitative change driven by factor innovation. According to the principles of Marxist political economy, productivity is composed of three major factors: laborers, means of production, and objects of labor. The "new" of new productive forces are precisely reflected in the leap of these three major factors and their optimized combination. Its essence is the advanced productivity state generated by revolutionary technological breakthroughs, innovative allocation of production factors, and deep transformation and upgrading of industries (Xi, 2024).

First, the energy level of workers has leaped. Workers in the context of new productive forces are no longer manual laborers or simple skilled operators in the traditional sense, but knowledge-based, skilled, and innovative talents who master advanced science and technology, can use new production tools, and have the ability to continuously innovate (Han & Liao, 2024). The emergence of emerging professions such as data scientists, algorithm engineers, and artificial intelligence trainers is a direct reflection of the leap in workers' energy levels. Through their own knowledge creation and application, they have become the core subjects of value creation.

Secondly, the means of labor have undergone revolutionary changes. Digital, intelligent, and networked technologies represented by artificial intelligence, cloud computing, big data, and the Internet of Things constitute the core means of labor of the new productive forces (Acemoglu & Restrepo, 2018). These highly permeable general-purpose technologies (GPTs) have not only greatly improved production efficiency, but have also profoundly changed the mode of production and organizational form, making personalized customization, flexible manufacturing, and global collaboration possible.

Finally, the scope of labor objects has been greatly expanded. Data, as a new type of production factor, has become a key labor object (Jones & Tonetti, 2020). At the same time, with the development of technologies such as biotechnology, new materials, and deep-sea and deep-space exploration, the objects of labor have expanded from traditional material resources to new fields such as genes, quantum information, and dark matter. This has made the source of value creation no longer limited to limited physical resources, but more shifted to nearly unlimited data resources and knowledge resources.

To sum up, the new productive forces is the organic unity of high technology (centered on cutting-edge technology), high efficiency (substantially improved total factor productivity), and high quality (green, sustainable, and high added value) (Yinxing, 2024). It emphasizes the leading role of innovation-driven development and presents profound characteristics of greening (coordination of development and environmental protection) and integration (deep integration of digital technology and the real economy).

The Foundation of Theory: New Demands of the New Productive Forces on Human Capital

The reshaping of the energy level of factors by the new productive forces will inevitably put forward new and systematic requirements for "people" as the core production factor. This demand goes far beyond the mastery of a single professional skill, but points to a more comprehensive and profound literacy structure, that is, the core literacy model that "new quality college students" should possess.

Value literacy level: the integration of patriotism and scientific and technological ethics. The development of the new productive forces serves the grand goal of China's modernization, which requires future talents to have a deep patriotism and a global vision, and to be able to integrate personal development into national strategic needs. At the same time, in the face of the ethical risks that disruptive technologies such as gene editing and artificial intelligence may bring, a strong sense of scientific and technological ethics and social responsibility have become essential. They must be practitioners of "responsible innovation" and be able to adhere to the bottom line of humanity in scientific and technological exploration (Stilgoe et al., 2020).

Knowledge structure level: T-shaped structure of deep professionalism and cross-border integration. To cope with complex innovation challenges, talents need to have in-depth professional knowledge in a certain field (the vertical line of the T-shaped structure), which is the foundation of innovation. But more importantly, they must have a broad interdisciplinary knowledge perspective and strong knowledge integration capabilities (the horizontal line of the T-shaped structure), and be able to skillfully use thinking patterns such as "artificial intelligence +"and "biotechnology +" to achieve breakthroughs in the intersection of disciplines (Demirkan & Spohrer, 2018). The knowledge structure should move from "specialization and depth" to the organic unity of "specialization and depth" and "broadness".

Ability system level: From knowledge application to complex creation. In today's increasingly convenient knowledge acquisition, the focus of ability must be shifted upwards. Critical thinking and complex problem-solving skills are the core of coping with uncertainty. Disruptive creative ability (the ability to create something original from 0 to 1) rather than simple imitation and improvement has become the key to value creation. In addition, human-machine collaboration ability (being good at using tools such as AI to amplify one's own intelligence) and lifelong learning ability (adapting to the rapid iteration of technology) have also become crucial (Di Battista et al., 2023).

Psychological trait level: Openness, resilience and entrepreneurship. The new productive forces development environment is full of uncertainty and rapid change. This requires talent to be open-minded and willing to accept new things and ideas. They must be psychologically resilient and able to benefit from challenges and failures, continuing to grow. At the same time, they must have an innate entrepreneurial spirit and not be satisfied with the status quo. They must be brave enough to explore and take risks, actively creating value (Taleb, 2012). (Zhu, 2025) pointed out that under the background of new productive forces, the social demand for talents has undergone profound changes. Besides solid professional knowledge, innovative spirit, innovative thinking and innovation ability are also required. Outstanding innovative talents have become the key support for high-quality development. (Ma, 2025) further analyzed the new requirements for film and television talents brought by the characteristics of new productive forces, including the improvement of digital literacy, innovative thinking and cross-cultural communication skills.

(Wang, 2024) identified the following key spiritual levels: the scientific spirit of innovation and exploration; the spirit of hard work to overcome difficulties; the collaborative spirit of promoting interdisciplinary cooperation; and the spirit of dedication to serving society. These interrelated spiritual elements constitute the core driving force for the high-quality development of new productive forces.

In summary, new productive forces inherently requires its practitioners — workers — to achieve a significant improvement in quality. The "standardized knowledge application-oriented" talents cultivated by traditional higher education can no longer meet these requirements. Instead, they must be replaced by "personalized knowledge creation-oriented" talents that can lead the way in the future. This profound shift in talent demand is the most fundamental and powerful driving force behind the paradigm shift in talent cultivation in higher education. Any exploration of the characteristics and qualities of the "new-generation college student" must be rooted in a deep understanding of this theoretical foundation.

The Core of The Concept: The Definition of The Connotation of "New Quality College Students"

Once the deep-seated demands of new productive forces on human capital have been clarified, a key theoretical task is to construct a comprehensive concept that can accurately summarize this new type of talent. The term "new quality college students" has been proposed in response to this demand. This section will systematically explain the meaning of this term.

"New quality college students" is not just a label, but a concept with profound contemporary implications and theoretical connotations. It specifically refers to the outstanding talents that the higher education system should focus on cultivating in the context of the development of new productive forces. These individuals will be able to actively adapt to, strongly support and lead the future scientific and technological revolution and industrial transformation. The "new quality" reflects a qualitative leap in the various elements that constitute talent. The connotations of this concept can be clarified at three levels:

"New" in value orientation: New quality college students have a deep sense of patriotism and global competence. They consciously integrate their personal ideals into the great journey of national modernization and rejuvenation, while also having the ability to engage in international competition and cooperation. Their innovative activities are embedded with a strong sense of scientific and technological ethics and sustainable development, and they pursue responsible innovation that benefits the human community (United Nations Educational & Organization, 2017).

"Quality" in ability composition: Their ability structure has undergone a fundamental transformation, evolving from a "knowledge storage type" to a "knowledge creation type". They possess not only profound professional knowledge, but also the "connectivity wisdom" to cross, integrate and recreate multidisciplinary knowledge (Scott, 2023). Critical thinking, design thinking, an entrepreneurial spirit and other high-level cognitive abilities are core characteristics of theirs.

"Change" in role positioning: Unlike traditional talent positioning, new quality college students are not passive adapters to social needs, but active agents and promoters of change in

future societies (Etzkowitz & Zhou, 2017). Through their innovative practices, they actively participate in defining future work forms, industrial structures, and social lifestyles.

It is important to distinguish between the concept of "new quality college students" and existing terms such as "outstanding college students" and "applied talents". "Outstanding college students" typically refer to individuals who excel in traditional academic evaluation systems (e.g. grades and academic publications), yet they may lack the cross-border integration capabilities and disruptive innovation potential that new-quality productivity urgently requires. While "applied talent" emphasizes the skillful application of existing knowledge and skills, "new-type students" emphasize exploration and creativity in the face of the unknown. Consequently, new-type students transcend and elevate the traditional concept of talent, representing a new paradigm. This transformation creates new demands for talent that transcend traditional academic excellence, requiring cross-border integration capabilities and disruptive innovation potential (Wu, 2025). Educational institutions must reform their systems to cultivate compound talents with enhanced employability, focusing on innovation-driven capabilities rather than solely traditional academic metrics (Liu et al., 2024).

The Core of the Concept: Four Typical Characteristics of "New-Type College Students"

Endogenous innovation. This is the core characteristic. The innovative behavior of new-type college students is not driven by external instructions or utilitarian goals, but by their inherent curiosity, desire for exploration, and creative passion. They are not satisfied with inherited learning and are accustomed to critically examining existing knowledge, technology, and solutions. They always question things and have an impulse to improve, asking themselves, "Can it be better? Can it be different?" This endogenous nature makes their innovative activities sustainable and resilient, enabling them to withstand the uncertainty of the external environment (Amabile, 2018).

Deep complexity. Its characteristics are not those of a "jack of all trades" with only a superficial understanding, but rather a "high degree of complexity" based on "deep specialization". They have a solid professional foundation, but can also shuttle freely between multiple disciplines to form T-, π- or grid-shaped knowledge structures. They excel at using interdisciplinary thinking tools and languages to forge "super connections" between seemingly disparate fields such as artificial intelligence, biotechnology, and the humanities and social sciences. This enables them to solve complex problems that a single discipline cannot handle (Gardner, 2010).

Strategic foresight. New-generation college students have an innate ability to foresee the future. They can keenly perceive the cutting-edge dynamics of scientific and technological development, as well as the long-term trends of social evolution. They can then transform this insight into the strategic direction of their personal learning and development. They are not only concerned with "how to find a good job", but also with "how to create the jobs that will be needed by future societies". This foresight enables them to actively align their learning and innovation activities with the needs of strategic emerging industries in the country, such as the digital and green economies and the life sciences. (Goh, 2025)argues that strategic foresight enables leaders to anticipate and adapt to evolving norms and expectations, thereby emphasising its importance for the development of future-ready leadership. Educational institutions are increasingly recognising the value of developing foresight capabilities among students. (Charungkaittikul et al., 2021) demonstrate how engagement between universities and industry through projects such

as 'Kizashi' can encourage self-direction in foresight and skills anticipation among undergraduates, helping them to identify future social trends and business opportunities. (Chen et al., 2021) provide empirical evidence that futures-oriented pedagogy significantly improves students' foresight competency. This is particularly evident in their enhanced ability to think in 5–20 year timeframes and understand the impact of trends through systems thinking approaches.

Dynamic adaptability. In an era of rapid technological and social change, knowledge and skills quickly become outdated. The core competitiveness of high-quality college students lies in their strong ability to learn throughout their lives and to adapt quickly. They view change as the norm, embrace uncertainty and can constantly adjust their knowledge, skills and thinking patterns to adapt to, and even lead, new environments. This characteristic aligns with Taleb's concept of "antifragility", meaning the ability to grow stronger under stress and pressure (Taleb, 2012). They are the "agile developers" of their own careers rather than passive "employees" waiting for assignments.

In summary, the concept of "new quality college students" has rich connotations and distinct characteristics. It accurately depicts the ideal talent required for developing new productive forces. This concept provides a clear "target portrait" for reflecting on and reconstructing the current higher education system. Subsequent discussions on the transformation of training paradigms will focus on how to cultivate talent with these characteristics effectively.

The Key To Transformation: New Productive Forces Drives Paradigm Shift In Higher Education

The establishment of the "New Quality College Students" as the desired profile highlights the significant discrepancy between traditional higher education talent development models and future requirements. New productive forces brings technological innovation and a fundamental reshaping of knowledge production, dissemination and application. This will inevitably lead to a systematic shift in higher education, moving from the "standardized, scaled, and lag-free" paradigm of the Industrial Age to the "personalized, adaptable, and forward-looking" paradigm of the Information Intelligence Era. This "paradigm shift" is reflected in the following five key dimensions.

Firstly, there is a shift in training objectives from "standardized practitioners" to "personalized creators". In the industrial age, higher education aimed to cultivate uniformly qualified and skilled "screws" for the social machine, implicitly imbued with the logic of standardization and fungibility. However, new productive forces relies on innovation, and the essence of innovation is uniqueness, differentiation and non-standardization. Therefore, the training goal must evolve from "becoming a talent" to "becoming an adult", i.e. from mass-producing knowledge-based applied talent to nurturing the creative potential and unique personality of each student (Zhao, 2018). This means that colleges and universities are no longer primarily tasked with instilling established knowledge, but rather with igniting students' inner innovation engine and cultivating their subjectivity and initiative. The goal should be to stimulate curiosity and the desire to explore (the source of endogenous innovation), to cultivate critical and design thinking (the methodology of creativity) and to forge the courage and resilience to embrace uncertainty (the psychological basis of dynamic adaptability). This requires the educational concept to shift from "shaping" to "guiding and empowering", truly respecting the individual

interests and talents of students and achieving a transformation from “one size fits all” to “one size fits one”.

Secondly, there has been an iteration of the curriculum system, evolving from a “rigid discipline system” to a “flexible project ecology”. The rigid curriculum system, which is built around established disciplines and majors, emerged in response to stable social needs. However, its inherent barriers and solidified characteristics have become the biggest obstacle to cultivating multidisciplinary talent. The complex problems faced by the new productive forces, such as climate change and smart social governance, require us to cross disciplinary boundaries. The aim of reforming the curriculum system is to create a flexible, open and reconfigurable “project ecology”. Specific measures include breaking down disciplinary barriers by vigorously developing interdisciplinary degree programs, micro-majors and honors courses that allow students to freely combine modules according to their personal interests and project needs (NEET, 2024). Second, strengthening “cutting-edge” and “dynamic” by making artificial intelligence, data science and science and technology ethics compulsory for all students and establishing a rapid update mechanism for course content to incorporate the latest scientific and technological achievements promptly. The promotion of “project-based learning” (PBL) involves solving real, complex, real-world problems at the core of interdisciplinary course modules. This allows students to “learn by doing” and integrate knowledge through collaboration, transforming the curriculum system from a knowledge transmission system into a field for the simulation of knowledge creation and application (Barron & Darling-Hammond, 2008).

The third is the teaching model revolution: shifting from a “teacher-centred” to a “student-centred” approach. The traditional “teaching-receiving” model finds it difficult to cultivate students` high-level thinking abilities. The new productive forces requires talent that can solve complex problems, and this can only be achieved through active, exploratory and socially interactive deep learning. Therefore, a revolution in teaching models is necessary. Firstly, teachers must change their role from “authoritative transmitters of knowledge” to “designers, guides, and collaborators of learning”, and students must change their role from passive “listeners” to active “explorers and creators”. Secondly, teaching methods must be innovated, with a comprehensive promotion of inquiry-based learning, case teaching and flipped classrooms. Classroom time should mainly be used for discussion, debate, collaboration and practice. Thirdly, technology must be empowered and technologies such as artificial intelligence and big data must be used to deliver teaching on a large scale in accordance with students` aptitude (adaptive learning). For instance, AI teaching assistants could take on repetitive tasks such as knowledge transfer and homework correction, allowing teachers to focus on developing students` thinking and personalities (Baker, 2016). Another example is the use of VR/AR technology to create immersive learning environments, such as virtual laboratories and historical scene restoration, to enhance the learning experience.

Fourthly, there has been a shift in evaluation mechanisms, moving from “knowledge assessment” to “innovation incentives”. The “one test, one outcome” summative evaluation method significantly stifles students` adventurous spirit and drive for innovation. New productive forces values the innovative potential of achievements rather than the accuracy with which existing knowledge is replicated. Therefore, the evaluation mechanism must undergo a fundamental shift. Firstly, a shift from single-track to multiple-track evaluation is required. A comprehensive system combining process-based, formative and summative assessments should

be established, with project reports, design proposals, product prototypes, academic papers and social practice carrying significantly more weight in the overall evaluation. Secondly, the focus of the evaluation should shift from knowledge to competence, moving from assessing how much knowledge has been memorized to assessing what abilities have been demonstrated, such as critical thinking, creativity, collaboration and communication. Thirdly, diverse achievements should be recognized. Students` achievements in high-level competitions, patent applications, entrepreneurial ventures and community service should be incorporated into the academic credit system and used as important criteria for promotion and evaluation. This would establish an incentive channel guided by "innovation value". Wang & Jiang (2024) develop a five-dimensional evaluation framework for engineering students' innovative ability, encompassing creative thinking, problem-solving skills, teamwork, technical application, and autonomous learning, demonstrating effective measurement of diverse innovation competencies(Wang & Jiang, 2024).

The fifth is the deepening of the governance ecology, evolving from a "management closed loop" to "open integration". Universities are no longer ivory towers, but rather key nodes in an innovation network. Cultivating high-quality college students cannot be done on a closed campus. An open education ecosystem must be built, with the four "university-government-industry-society" (UGIS) helices co-evolving (Carayannis & Campbell, 2009). This requires a deep transformation of university governance. Firstly, institutions should open and actively cooperate with industry-leading enterprises and research institutes to build new educational platforms, such as the Future Technology College and the Modern Industry College. They should also work together to formulate training programs, deliver teaching and guide students. Secondly, a dual-track mechanism for teachers should be implemented and the "dual mentor system" or "dual employment system" vigorously promoted. Many enterprise experts and entrepreneurs with extensive practical experience should be appointed as industry mentors to complement the academic mentors on campus. Thirdly, resources should be integrated to enable students to access laboratories, teams and projects from an early stage, providing them with exposure to cutting-edge scientific research equipment and the real industrial environment. At the same time, real projects and problems faced by enterprises should be introduced into the classroom and graduation projects.

Overall, therefore, improving quality and productivity is crucial to unlocking a paradigm shift in talent cultivation in higher education. The five dimensions of change are interconnected and mutually supportive, forming a comprehensive and systematic response. Its core logic involves shifting the focus from a paradigm centered on "teaching" and "knowledge" to one centered on "learning" and based on "ability" and "competence". This profound shift in paradigm is an inevitable choice for higher education institutions if they are to adapt to and lead the development of the times.

The Path to Practice: A Systematic Approach to Cultivating "New Quality College Students"

The previous article demonstrated the inevitability of a paradigm shift. Translating this into reality requires an interconnected and coordinated systematic approach. Rather than fine-tuning the existing system, cultivating "new quality college students" requires concerted efforts at three levels: reshaping concepts, innovating approaches and strengthening support systems. The aim is to build a new educational ecosystem centered on students and driven by innovation.

Firstly, prioritize the following concepts in order to reshape an educational philosophy that is "student-centered, creativity-focused and future-oriented": Any profound transformation must begin with a renewed focus on these concepts. Universities must first reach a consensus on the overall design and establish an educational philosophy geared towards productivity of a new kind. The focus should shift from "shaping" to "empowering": Administrators and faculty must understand that their primary task is no longer to "shape" students according to predefined templates, but to "empower" each student's unique potential. This requires respecting students` subjectivity and viewing them as active creators rather than passive recipients. "Creation as the core" must be established as the central tenet. Place the cultivation of students' innovative spirit, entrepreneurial awareness, and creative ability at the center of talent training goals. Make this the core yardstick for measuring educational quality and ensure it runs through the entire education and teaching process. Strengthen "future-oriented" thinking: Decision-making and reform should be based on forward-looking research and judgement regarding the development trends of science, technology, and society over the next 10–20 years. Cultivate talent that can create the future, not just adapt to the present. This concept should permeate every aspect of the school through strategic planning, policy documents, and campus culture (Scott, 2023).

The second is path innovation. This involves constructing a core education closed loop driven by the three-dimensional "curriculum-teaching-platform". Implementing the concept requires innovative practices within the core teaching links. Curriculum reconstruction: Build an interdisciplinary, project-based, cutting-edge curriculum resource library. Break down college barriers: Set up an interdisciplinary course construction fund and require or strongly encourage the creation of cross-disciplinary courses designed and taught by teachers from different colleges. Project-based transformation: Transform existing core courses into project-based learning (PBL) by organizing teaching content around real and complex projects and enabling students to learn and integrate knowledge by solving practical problems. Dynamic update mechanism: Set up a regular evaluation and update system for course content to ensure it keeps pace with advances in science, technology and industry trends. For example, set up a series of compulsory "Frontier Technology Lectures" modules and invite industry experts to deliver lectures. Teaching upgrade: Promote the new teaching model of "inquiry-based, personalized and human-computer collaboration". Strengthen teacher training: Provide teachers with systematic training on teaching methods, particularly PBL methods, as well as guidance skills and classroom design, to improve their ability to organize deep learning and guide enquiry. Empower personalized learning: Introduce adaptive learning technology platforms to provide personalized learning paths and resource recommendations based on students' learning progress and ability differences. This will enable large-scale teaching in accordance with their aptitude. Make good use of human-computer collaboration. Encourage teachers to use AI as a powerful auxiliary teaching tool. For example, they could use AI to conduct preliminary evaluations of essays, generate personalized exercises and simulate dialogues. This would allow teachers to focus on higher-level teaching interactions (Selwyn, 2019). Empower the platform: Create a practical environment characterized by "open sharing, intelligent advancement, and integration of academic research". Building an "Innovation Practice Centre": This involves integrating existing laboratories, makerspaces, and entrepreneurial incubators to create a comprehensive platform that integrates design, manufacturing, experimentation, and communication. This platform is open to students 24/7 and encourages creative ideas while providing the conditions for their realization. Deepening the integration of industry, academia, and research: By integrating with the aforementioned Modern

Industry College and Future Technology College, students will have the opportunity to participate in co-built laboratories or corporate R&D centers during their junior and senior years. They will participate in real-world R&D projects, honing their innovative capabilities in the process.

Thirdly, strengthening support: This involves reinforcing the three-pronged support system of "faculty, evaluation and culture". Reforming this support system and removing institutional barriers is essential to ensure the effective operation of this core approach. Upgrading the faculty: Cultivate a team of "new-level instructors" who excel in academia and industry. Reform the faculty evaluation and promotion system. Incorporate faculty participation in interdisciplinary teaching, the guidance of student innovation and entrepreneurship, and the achievement of applied research results (such as patents and consulting reports) into the professional title evaluation and performance appraisal system. Give these factors equal or even greater weight than traditional paper and project indicators (Chang et al., 2025). Implement the "Industry Professor" program: Recruit large numbers of high-caliber individuals with doctoral degrees and extensive industry experience as full-time or part-time instructors to bring cutting-edge industry perspectives and practical experience. Set up a long-term faculty development mechanism: Set up a teaching development center to provide ongoing training and support to faculty members in pedagogy and the application of new technologies. Reform assessment: Set up a "multi-faceted, process-based and developmental" student assessment system. Promote "competence profiles": Create an electronic profile for each student that records not only their course grades, but also comprehensive information on their research projects, competition awards, entrepreneurial experiences and community service. This will form a comprehensive "competence profile". Reform the admissions selection process: For graduate, master`s and doctoral admissions, strengthen the assessment of students' interdisciplinary background, research potential and innovative project experience rather than focusing solely on test scores and GPA. Recognize diverse successes: Establish university-level honors, such as the "Innovation Scholarship" and "Entrepreneurship Star", to recognize students who have achieved outstanding results through non-traditional academic paths and set new examples of success. Cultural immersion: Foster a campus ecosystem that encourages innovation, tolerates failure and promotes cross-disciplinary exchange (Zhan et al., 2024). Organize high-quality innovation and cultural activities, such as maker marathons, innovation forums and cross-disciplinary workshops, to promote an atmosphere of innovation and encourage the exchange of ideas among students, between students and scholars, and between students and entrepreneurs. Design systems that tolerate failure. Allow students to fail in exploratory projects and entrepreneurial practices and implement error-tolerance mechanisms accordingly. For example, failed entrepreneurial experiences could be converted into practical credits following an evaluation that focuses on learning and growth. Create open physical spaces: Design more public spaces on campus that encourage informal communication, such as open learning areas and cafés, to bring together students from different academic backgrounds.

Conclusion

Against the backdrop of rapid advances in productivity, this article systematically explores the inevitable direction and core principles of paradigm shifts in talent cultivation in higher education. The research draws the following key conclusions:

Firstly, new productivity essentially involves a comprehensive qualitative change in workers, labor processes and labor objects, as well as their optimized combination. This creates new, systematic demands on human capital, including values, knowledge structures, competence systems and psychological characteristics. These demands constitute the most fundamental external driving force for higher education reform.

Secondly, in response to these demands, the article introduces the concept of 'new quality college students', defining them as future creators who can proactively adapt to, support and lead the development of new productivity. The article also identifies four key characteristics of these students: endogenous innovation, deep integration, strategic foresight and dynamic adaptability. This concept provides a clear picture of the goals of higher education reform.

Thirdly, cultivating college students of a new quality is by no means tampering with the existing system; rather, it requires a profound paradigm shift in higher education. This systematic transformation involves the coordinated evolution and overall reconstruction of five dimensions: training objectives (shifting from the production of standardised practitioners to the cultivation of personalised creators); curriculum (transitioning from a rigid disciplinary system to a flexible project ecosystem); teaching models (evolving from teacher-centred to student-centred deep learning); evaluation mechanisms (shifting from knowledge assessment to innovation incentives); and governance ecosystems (transforming from closed-loop management to open and integrated systems).

Fourthly, implementing this paradigm shift requires a systematic approach encompassing the coordinated advancement of three key areas: conceptual reshaping; innovation in core approaches, such as curriculum, teaching and platforms; and strengthening support and guarantees, such as faculty, evaluation and culture. The ultimate goal is to build a new educational ecosystem centered on unleashing students' creative potential.

This study establishes an integrative framework that links national strategy with the cultivation of university students, clarifies the concept of 'new-quality university students', and illustrates the rationale behind the transformation of the higher education talent system. It provides a roadmap for comprehensive educational reform. However, as the study relies on theoretical methods, its conclusions require empirical validation and continuous updating. Future research should explore differentiated cultivation models across different types of university and disciplines, develop assessment systems for core competencies, address ethical issues in AI-empowered education and make international comparisons to gain a broader perspective.

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