

Exploration of Project-Based Teaching Resource Construction for the HTML5 Application Development Fundamentals Course under New Quality Productivity

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Abstract: New Quality Productivity, characterized by innovation-driven growth, digital transformation, and high-quality development, imposes higher demands on the cultivation of technical skilled talents. As a core foundational course in Software Technology, the teaching resource construction for HTML5 Application Development Fundamentals urgently needs to adapt to these new requirements. Based on the project-based teaching concept, this paper systematically elaborates the construction and practice path of project-based teaching resources for the course from three dimensions: integration and digital construction of teaching resources, project-based curriculum design and development, and industry-education integration with practical teaching support. The study proposes a closed-loop resource construction process of "demand investigation → resource collection → module integration → platform building → dynamic updates", establishes a three-tier hierarchical project system of "foundation level → advancement level → comprehensive level", and develops a diversified assessment and evaluation mechanism. Practice demonstrates that this model effectively enhances students' HTML5 application development abilities, innovative thinking, and professional competencies, providing a referable paradigm for project-based teaching reform in computer-related courses.

Keywords: New Quality Productivity, HTML5 Application Development, Project-Based Teaching, Teaching Resource Construction, Industry-Education Integration.

1. Introduction

New Quality Productivity is a new type of productivity led by technological innovation and aimed at high-quality development, emphasizing innovation-driven growth and digital transformation [3]. With the acceleration of global digitalization, the education sector faces the urgent need for digital transformation to cultivate innovative talents capable of adapting to the digital era.

HTML5 Application Development Fundamentals is a core course in Software Technology. HTML5 has become the mainstream tool for modern web application development, and mastering its application development is of great significance for cultivating versatile talents. However, traditional teaching focuses on theoretical instruction while neglecting practical skill development, with scattered resources and lack of systematic management, making it difficult to meet talent cultivation needs under New Quality Productivity.

Currently, more and more institutions are exploring project-based teaching models to cultivate students' hands-on abilities, teamwork, and problem-solving skills through practical project development [3]. Against this backdrop, how to construct systematic and modular project-based teaching resources oriented by New Quality Productivity has become an urgent research topic.

2. New Requirements for Course Teaching under New Quality Productivity

2.1. New Requirements for Talent Competency Cultivation

New Quality Productivity emphasizes innovation-driven and high-quality development, imposing higher demands on talent cultivation. In the field of Web front-end development, with the rapid development of artificial intelligence, big data, and cloud computing, application development presents new characteristics of accelerated technology integration, diversified application forms, and collaborative development models [1]. Enterprises not only require front-end developers to master core technologies like HTML and CSS but also demand innovative thinking, teamwork capabilities, and the ability to solve complex problems. This demand for versatile talents requires course teaching to shift from mere skill instruction to comprehensive competency development.

2.2. New Demands for Teaching Model Reform

The traditional "teacher lecture → student listening → after-class practice" teaching model suffers from the following problems: first, the disconnect between theory and practice, making it difficult for students to apply learned knowledge to practical project development; second, scattered teaching resources lacking systematic integration, which is not conducive to students' autonomous learning and knowledge construction; third, the lack of real project-driven experiences prevents students from experiencing the complete project development process. Under New Quality Productivity, course teaching urgently needs to shift from "teacher-centered" to "learner-centered" instruction, closely

integrating theoretical knowledge with practical application through project-based teaching [5].

2.3. New Demands for Digital Resource Construction

New Quality Productivity emphasizes digital transformation, requiring teaching resource construction to break through the temporal and spatial limitations of traditional classrooms, providing students with rich and flexible learning materials and interactive methods[2]. Specifically, teaching resource construction needs to achieve the following goals: first, systematic integration of resources, structuring course knowledge points, skills, and cases in an organized manner; second, digital presentation of resources, enabling centralized management and convenient access through online platforms; third, dynamic updates of resources, keeping pace with HTML5 technology frontiers to maintain the advancement and practicality of teaching content.

3. Construction Path of Course Project-Based Teaching Resources

3.1. Integration and Digital Construction of Teaching Resources

(1) Demand Investigation and Target Positioning

Course resource construction requires systematic investigation of the HTML5 development industry to understand enterprise requirements for talent skills and competencies under New Quality Productivity, covering the knowledge and technology needed for enterprise project development, the latest changes in industry talent demands, and the gap between existing resources and New Quality Productivity requirements. Based on investigation results, determine resource construction objectives to ensure precise alignment with industrial demands.

(2) Collection and Systematic Integration of Teaching Resources

Extensively collect HTML5-related textbooks, online courses, open-source projects, technical documentation, and other resources. After screening high-quality resources, integrate knowledge points, skills, and cases into a systematic and modular teaching resource library, forming a five-in-one system of "courseware, lesson plans, video tutorials, case analyses, and online assessments." The resource library builds comprehensive resources based on HTML5 and CSS3 knowledge modules, practical resources based on school-enterprise cooperation projects, and auxiliary resources based on actual functional applications [4], managed centrally through a digital platform to facilitate students' autonomous learning and review.

(3) Dynamic Update and Maintenance Mechanism for Resources

HTML5 technology develops rapidly, requiring teaching resources to maintain dynamic updates. The research team establishes a maintenance mechanism: regularly monitor technological developments and changes in New Quality Productivity demands, timely collect new materials and project cases; regularly update the digital teaching resource platform to ensure advanced and practical content; establish a user feedback mechanism to continuously optimize resource content based on teacher and student experiences.

3.2. Project-Based Curriculum Design and Development

(1) Construction of a "Three-Tier" Project System

Based on the competency requirements for HTML5 development talents under New Quality Productivity, build a three-tier hierarchical project system[5]: foundational training projects focused on imitation to solidify coding standards, adapting to students with weaker foundations; advanced improvement projects focused on adaptation to cultivate transfer capabilities, adapting to intermediate-level students; enterprise-level comprehensive projects focused on original creation to exercise engineering thinking, adapting to stronger students. Clarify teaching objectives and skill points for each module, reflecting the requirements of New Quality Productivity for innovation, efficiency, and quality.

(2) "Project-Driven, Task-Oriented" Teaching Process Design

Adopt the "project-driven, task-oriented" teaching method, integrating project tasks into the teaching process. Each project is broken down into multiple tasks, with each task containing five links: "task objective → introduction → explanation → consolidation → expansion"[2]. Students progressively advance project development according to the task flow, deepening their understanding of course content through practical problem-solving. Teachers act as guides, providing technical support and knowledge explanations, organizing students to form project teams, and cultivating teamwork and communication skills through discussion, division of labor, and peer review.

(3) Diversified Assessment and Evaluation System Design

Establish an assessment and evaluation system adapted to project-based courses: combine process-oriented evaluation with outcome-oriented evaluation, emphasizing the project development process; introduce multiple evaluation subjects, ensuring objective and fair assessment through project presentations, on-site defense, peer evaluation, and teacher evaluation[3]. Evaluation dimensions include project completion quality, development process performance, and innovation and expansion capabilities, comprehensively reflecting students' knowledge mastery, skill levels, and overall competencies.

3.3. Industry-Education Integration and Practical Teaching Support

(1) Establishment of School-Enterprise Cooperation Mechanisms

Actively establish long-term and stable cooperative relationships with IT enterprises, conducting in-depth cooperation in talent cultivation, curriculum construction, practical teaching, and teacher training[6]. Cooperation contents include: jointly formulating talent cultivation plans, introducing real enterprise projects into teaching, allowing students to learn and grow in authentic work environments; jointly building practical teaching bases, providing students with internship opportunities; establishing a "student-employee dual identity" mechanism to promote high-quality employment.

(2) Construction of Enterprise Adjunct Faculty

Select frontline developers with rich practical experience from partner enterprises to serve as adjunct instructors, participating in curriculum design, project guidance, and practical teaching, bringing actual project experience and

latest technologies into the classroom[6]. Meanwhile, school teachers regularly engage in practical exercises at enterprises, understanding enterprise needs and technological trends, achieving complementary advantages between school and enterprise faculty.

(3) Organization of Practical Teaching Activities

Regularly hold practical teaching achievement exhibition activities, such as project achievement presentations and technical innovation competitions, providing students with platforms to showcase their talents and achievements, stimulating learning enthusiasm and innovation capabilities. Through enterprise expert review and industry standard benchmarking, evaluate students' project development levels, identify shortcomings, and facilitate timely improvements.

4. Course Characteristics and Innovations

4.1. Innovation in Teaching Philosophy

Guided by New Quality Productivity, this research breaks through the limitation of "emphasizing knowledge transmission while neglecting competency cultivation" in traditional teaching models. Through project-based teaching resource construction and practice, it aims to cultivate versatile talents who not only master core HTML5 technologies but also possess innovative thinking, teamwork capabilities, and the ability to solve complex problems, providing students with more development opportunities in their future careers.

4.2. Innovation in Teaching Methods

The in-depth application of project-based teaching methodology is the core innovation point of the course. Students participate in the entire lifecycle of projects, from requirements analysis, design, coding, testing, to deployment and maintenance, comprehensively experiencing the project development process. This full-process practical approach enables students to deeply understand each stage of project development, cultivating their project management capabilities and systematic thinking abilities. Meanwhile, it emphasizes the importance of teamwork in project development, cultivating students' teamwork and communication skills through group discussions, division of labor, and peer reviews.

4.3. Innovation in Teaching Evaluation

Breaking through the traditional evaluation method dominated by final examinations, this research establishes a diversified evaluation system combining process-oriented and outcome-oriented evaluation. It introduces multiple evaluation subjects including teachers, students, and enterprise mentors, evaluating students' learning effectiveness from different perspectives to make evaluation results more objective and practical [3]. Through multiple staged assessments during the project process, it timely identifies students' learning problems and provides targeted guidance.

4.4. Innovation in Industry-Education Integration

Integrate high-quality resources from schools and

enterprises to build a unified digital teaching resource platform, achieving centralized management and sharing of teaching resources including course textbooks, courseware, video tutorials, case libraries, and online assessments. Invite frontline enterprise developers to participate in teaching, bringing actual project experience and latest technologies into the classroom, realizing complementary advantages and collaborative development between school and enterprise faculty [6].

5. Conclusion

Guided by New Quality Productivity, this research has conducted a systematic study on the construction of project-based teaching resources for the HTML5 Application Development Fundamentals course, establishing a closed-loop teaching resource construction process, a three-tier hierarchical project system, and a diversified assessment and evaluation mechanism, forming an industry-education integration education model. Practice demonstrates that project-based teaching resource construction can effectively address issues such as the disconnect between theory and practice and scattered resources, enhancing students' innovative thinking and teamwork capabilities. Future research will further explore AI-assisted teaching, establish intelligent project assessment and personalized learning path recommendation mechanisms, and continuously promote innovation in teaching resource construction and practice.

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