

The Construction of Higher Education Public Basic course Teaching System on Student-centered

Gailin Liu^{1, a*}, Hongbo Ji^{1, b}

¹ Xi'an Technological University, Xi'an, Shaanxi, China

^{a,*} email:823258619@qq.com, ^bemail:10932011@qq.com

Abstract. With its aims to cultivate high-quality competent individuals and students at its core, the perennial focal point of higher education research is how to leverage this student factor to achieve high-quality education. The relevant research on student-centered education has gradually gained prominence since the 1990s. Based on the student-centered teaching philosophy, the School of Freshmen of Xi'an Technological University was established, adhering to problem-oriented approaches, consistently and persistently advances reforms in the public basic curriculum system and pedagogical approaches. The school has established "Foundation, Advanced and Personalized" with tiered classification curriculum development system, which has led to the formation of the "12345" teaching model, emphasizing "one central focus (student-centered), two effective means (online and offline), three critical stages (pre-class, in-class, post-class), four layers of content (theoretical knowledge, case introduction, practical application, and quality enhancement), and five dimensions of assessment (self-learning on the platform, classroom efficiency, post-class assignments, various exams, and practical and innovative competitions)." With the motto of "dedicated teaching and committed nurturing", a modern higher education teaching team with high teaching competence and strong research abilities has been established. Ultimately, it has achieved the goal of providing a strong foundation for sustainable talent development in public basic courses, resulting in significant educational achievements.

Keywords: Student-centered; Higher education basic curriculum; Curriculum system; Teaching Model; Team development

1. Introduction

The development of undergraduates has always been highly prioritized in the Chinese education, resulting in the issuance of a series of relevant policies. In October 2019, the Ministry of Education issued the "Opinions on Deepening Undergraduate Education and Teaching Reform to Significantly Improve Education Quality of College Students" [1], which explicitly called for comprehensive implementation of student-centered higher education. It emphasized comprehensive curriculum system reforms, making curricula more advanced, innovative, and challenging. The document also encouraged the active development of "Internet + education," exploration of intelligent educational modes, a revolution in classroom teaching, and the organic integration of process-oriented and result-oriented academic evaluation systems. In May 2010, the "National Medium and Long-term Educational Reform and Development Plan (2010-2020)" [2] clearly stated the need to prioritize students, provide suitable education for each student, and focus on individual student development. In September 2019, the Ministry of Education published the "Implementation Opinions on Building First-Class Undergraduate Courses," [3] highlighting the importance of fully implementing the student-centered educational concept. The promulgation of these policies has vigorously promoted the popularization and development of the "student-centered" educational philosophy, sparking a surge of related theoretical and practical research in the Chinese education sector.

The concept of "student-centered" education was first introduced by progressive philosopher and educator John Dewey in the early 20th century [4]. As scholars continued to advance this concept, it eventually evolved into a learning theory, primarily thanks to American humanistic psychologist Carl Rogers [5].

In a broader sense, the student-centered philosophy focuses on students' growth and development, aiming to nurture well-rounded individuals with comprehensive knowledge and character development. It seeks to empower learners to engage actively in the process of knowledge acquisition and practical activities. In a narrower definition, it refers to a teaching approach and method that prioritizes student development, learning, and learning outcomes. The student-centered educational philosophy places significant emphasis on unleashing the potential and abilities of learners, encouraging active participation in the learning process, ultimately achieving effective learning outcomes.

2. Issues and Reform Measures

The fundamental mission of educational institutions is to cultivate talents for nation, so educational quality is the lifeblood of these institutions. Knowledge, skills, and qualities are the core components of high-quality education development. To enhance the quality of teaching and achieve the goal of producing high-quality talents, it is imperative to clarify the relationship between teaching and learning. Learning is the end, while teaching is the means; learning is the subject, while teaching is the guide; learning is internal, while teaching is external. In line with this, the student-centered educational philosophy must be earnestly implemented, not only in curriculum system design but also in teaching methods and other aspects. Students should be placed at the center of these considerations.

However, despite the emphasis on the student-centered philosophy, numerous issues persist in current higher education practices. These issues include rigid and uniform curriculum structures, authoritative teaching methods, passive learners, singular teaching approaches, and a disconnect between theory and practice.

Xi'an Technological University upholds the student-centered educational philosophy, focusing on "problem-oriented and "outcome-oriented" approaches. With the goal of cultivating high-quality talents, the university conducted an analysis of long-standing issues in basic education. The analysis revealed several problems: students' limited sustainable development capacity, which hampers their employ ability, career development, and societal value; a lack of solid foundational knowledge that affects the learning of subsequent specialized knowledge; slow adaptation of first-year students to university learning modes, insufficient self-learning abilities, and subpar learning outcomes.

To address these issues, the university implemented a series of reforms. In terms of administrative structure, the School of Freshmen was established, unifying first-year students under its management. In addition to the conventional academic advisor system, each class introduced an academic mentor model. This model involved hiring specialized professors to engage with freshmen, focusing on university adaptation, their growth and development. These efforts aimed to help first-year student's transition smoothly to the university learning environment. Regarding the academic program structure, the teaching tasks for six core basic courses (mathematics, physics, English, computer science, physical education, and engineering graphics) were assigned to the School of Freshmen. The school initiated a series of training, exchanges, reforms, and research activities related to curriculum system, teaching methods, and evaluation systems. These activities led to the development of a new basic curriculum talent development model.

3. Construction of a Student-Centered Curriculum System

In the design of the curriculum system, the student-centered educational philosophy is closely followed, enabling students to become the true masters of their learning. Thus, it is essential to consider the individual differences and needs of students in terms of their professional learning abilities. Teachers should provide students with more autonomy in choosing their courses, emphasize the integration of theory and practice, guide students to use diverse platforms rationally, and achieve a personalized, differentiated, and sustainable learning experience.

Based on these considerations, a tiered classification guided by a "foundation, advanced, and personalized" curriculum system was developed. This system integrates theory and practice into a

"theory learning in classroom, extracurricular application out classroom, and course competition" system, and combines knowledge and quality development into a "multi-modal, multidimensional, and personalized" learning resource platform.

3.1 Development of the Curriculum System with Tiered Classification. The study of public foundational courses is crucial in higher education, providing a solid foundation for subsequent specialized coursework and the continuous development of students. However, there are numerous issues in the current curriculum structure. Firstly, foundational courses are standardized with identical course structures, content and evaluation criteria. This lacked personalized design and planning for students in different majors, resulting in a mismatch between foundational courses and students' specific professional needs. Secondly, the course offerings are monotonous, rarely updated, and lack connections with students' subsequent specialized coursework, causing a disconnect and inadequate support for students' sustained learning and development. Lastly, the curriculum is overly flat, lacking a logical progression, and failing to accommodate the knowledge requirements of students at different levels.

Based on the above analysis and considering the variations in students' professional learning, foundational knowledge, and individual learning capabilities the School of Freshmen has adopted a stratified classification and curriculum design strategy for six major foundational courses. Students are grouped based on their knowledge proficiency levels, educational goals and course requirements. Different learning goals and education approach are set.

The curriculum system is categorized into science and engineering, humanity and management, and arts and sports disciplines, each having distinct objectives and requirements. Depending on the students' chosen majors, the courses are stratified from easy to advanced levels, establishing a "**foundational, advanced and personalized**" curriculum system with tiered classification. It is illustrated in Figure 1.

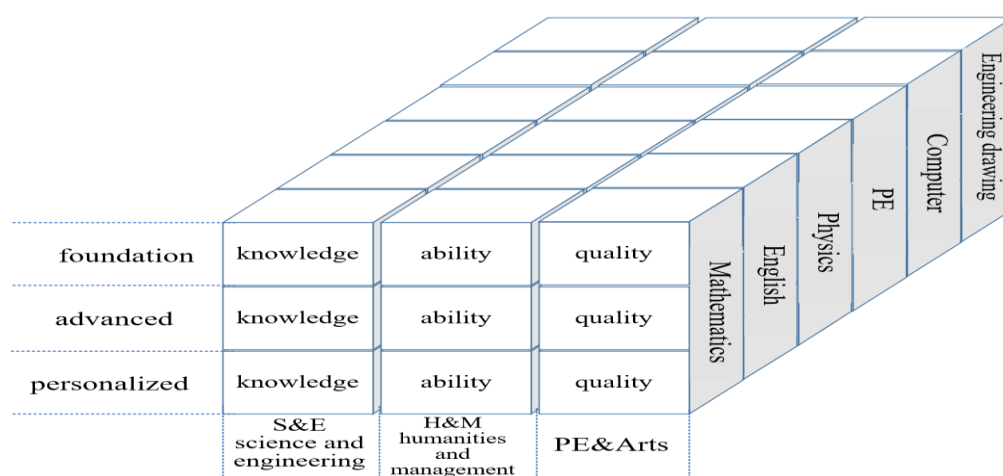


Figure 1. The construction of "Foundational, Advanced and Personalized" curriculum system with tiered classification

The foundational courses serve as core courses with the aim of meeting the need to establish a solid foundation for students' sustained learning. They are compulsory courses designed to provide essential knowledge. The offering of advanced courses is based on the objective of serving and supporting the requirements of various categories for senior-level specialized knowledge. These are elective courses. The design of personalized courses aims to meet the individual development and interests of different groups of students, and they are offered as elective courses. Among these, advanced courses and personalized courses offer students different levels of difficulty, depth, and breadth of knowledge resources. Additionally, based on individual student differences, a differentiated talent development model is established. It categorized students into different levels and set corresponding course modules and requirements to meet the demands of personalized

development. This helps students choose appropriate course content based on their interests and abilities, allowing them to align with their own career development goals and plans [6].

3.2 Integration of Theory and Practice learning System. Education in college involves both learning in class and outclass, encompassing the integration of theoretical knowledge and practical application. The process of theory learning is meant to guide practical application, and practical application, in turn, enhances the understanding and innovation of knowledge. Theory learning and practical application are interdependent and mutually reinforcing. They are inseparable and should not be severed from each other.

In practice, there has been a noticeable issue of "prioritizing knowledge and neglecting application"[7]. Most students focus on learning theoretical knowledge in the classroom while neglecting theoretical application and practical activities outside the classroom, and even fewer engage in innovative activities. This has led to lacking of the ability for students to apply theory in practice and solve real-world problems. To address this problem the School of Freshmen has constructed a system that integrates learning with the use of knowledge, consisting of "theory learning in classroom, extracurricular knowledge application out classroom and course competition innovation". This system is illustrated in Figure 2.

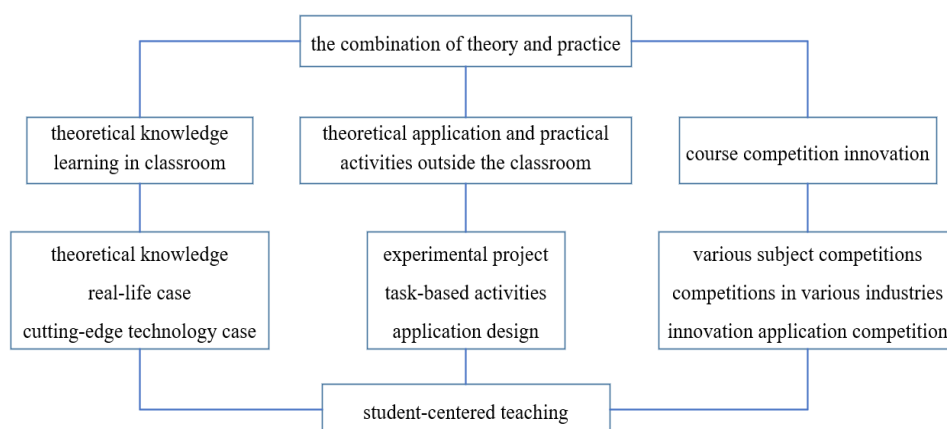


Figure 2. The Integrated Theory-Practice Learning System "theory learning in classroom, extracurricular knowledge application out classroom and course competition innovation"

In classroom teaching, instructors need to emphasize practical application while guiding students to learn theoretical knowledge. This requires instructors to introduce practical cases related to theory into their teaching.

In addition to classroom teaching, instructors should design extracurricular practical content related to theory. Various forms of practical activities should be conducted in collaboration with academic advisors, academic class directors, and student clubs to allow students to experience and apply theoretical knowledge in practice.

The establishment of discipline and course competition platforms provides students with more opportunities for practical application. The system combined various relevant theoretical knowledge and designed comprehensive innovation projects. According to the system, students work in teams and engage in interdisciplinary and cross-industry knowledge application and innovation competitions. These competition activities not only increase students' interest in learning, but also cultivate students' awareness and ability to learn theory through competition, apply knowledge, and engage in innovative applications.

3.3 Synergy of Knowledge and Literacy Learning Resource Platform. The diversity in students' personalities and needs necessitates that the student-centered education model offers various learning resources to cater to students with different levels, cognitive abilities, interests, and development directions. Therefore, the School of Freshmen has constructed "Multi-modal,

"Multidimensional and Personalized" resource platforms to achieve the goal of coordinated development of knowledge and comprehensive literacy. By purchasing, building, and utilizing existing other platforms of the University, it has formed various learning and application resource platforms, including basic knowledge, professional knowledge, industry development knowledge, comprehensive literacy, individual development, and lifelong learning. These platforms cover various aspects of knowledge. Throughout different stages of teaching and learning, such as "before class, in class, and after class," the role of the learning resource platforms is maximized. The construction framework of the learning resource platforms is shown in Figure 3.

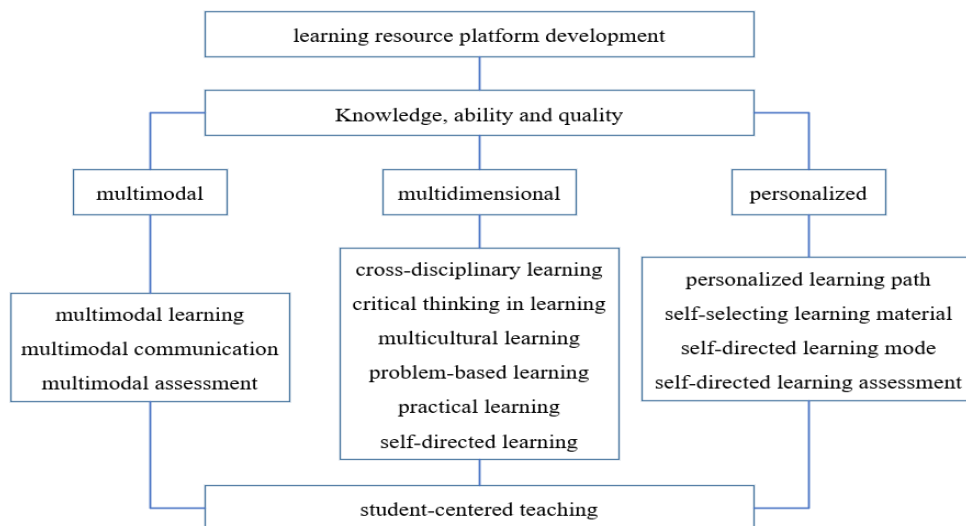


Figure 3. The construction of "Multi-modal, Multidimensional and Personalized" Learning Resource Platform

3.3.1 Multi-modal Effects. Through the construction and utilization of various resource platforms, students can achieve multi-modal learning, communication, and data analysis. Multi-modal learning emphasizes the use of multiple sensory modes to convey information in the field of education and training. This includes text, images, audio, video, and more. Instructors combine text, charts, and videos to deliver course content, meeting the needs of different types of learners in teaching activities. Students learn following their habits, preferences, and favorite learning methods to enhance the effectiveness of learning.

Multi-modal communication by students involves using various media to convey information. Students can communicate in multiple ways with the help of these methods, such as text, voice, images and symbols. These methods make students avoid some communication deficiencies and taboos, increasing the enthusiasm and richness of communication.

Multi-modal data analysis involves integrating and analyzing different types of data related to student learning. This helps students get more comprehensive understanding and self-insight. After learning, students can use the platform for self-assessment, discover effective learning modes, identify gaps between themselves and other students, and establish new learning plans.

The diversity and richness of multi-modality allow students to convey information through various sensory or media ways, facilitate the diverse needs of different students, improve the comprehensibility and attractiveness of information, and support students' innovation and interdisciplinary learning.

3.3.2 Multidimensional Effects. Multidimensional resource platforms help students achieve multidimensional learning. During the learning process, students consider and integrate multiple dimensions, perspectives, or factors to gain a more comprehensive understanding and knowledge. Students not only receive knowledge but also engage in thinking, exploration, evaluation, and application of knowledge. Multidimensional learning resources give students opportunities to cultivate critical thinking, to understand multicultural communication.

Multidimensional learning encourages students to connect knowledge and concepts from different subject areas. It also helps students foster their understanding of the inter-relatedness and integrative nature of knowledge, applying knowledge from different fields to real-world problem-solving.

Multidimensional learning emphasizes the cultivation of students' critical thinking skills, enabling them to examine and evaluate information, viewpoints, and evidence from multiple angles rather than merely accepting surface-level information.

Multidimensional learning also encompasses considering the impact of different cultures, values, and backgrounds on learning. This helps develop students' cultural sensitivity and global awareness.

This learning approach encourages students to pose open-ended questions and seek answers through research and investigation from various dimensions. Students need to consider multiple factors to solve problems.

During learning students apply knowledge in real-life contexts. It can enhance students' practical skills and experience to combining extracurricular practice and course competitions with project-based learning and field research.

Multidimensional resource platforms encourage students to actively participate in the learning process. It allows them to choose research and exploration directions and how to assess their learning effectiveness independently.

3.3.3 Personalized Effects. Personalized resource development can provide customized learning resources and learning modes for each student based on their unique needs, interests, learning styles, and abilities. This optimizes the learning process, making it easier for students to understand and absorb knowledge, ultimately improving learning outcomes. The advantages of Personalized are as following.

Establishing personalized learning paths: Instructors can create unique learning paths for students based on their starting levels and academic needs. This includes selecting appropriate learning materials, content, difficulty levels, and learning objectives.

Cultivating students' self-directed learning abilities: Personalized learning resources encourage students to actively engage in the learning process, enabling them to control their learning pace and methods more independently. Students can choose topics of interest, manage their learning time, and employ learning methods that suit them.

Assisting learning analysis and assessment: Instructors can use learning analysis tools and assessment methods to track students' progress. It also is the teachers' responsibility to identify students' weaknesses and needs and provide timely feedback to students. Teachers need to help students understand their learning progress and performance. Students can also use analytical tools to assess their learning status and discuss with instructors how to improve their learning plans and strategies, adjusting personalized learning plans to meet these needs.

Personalized resource development can meet students' individualized learning needs, enhances their motivation and engagement in learning, ultimately improving their learning effectiveness.

4. Construction of the Student-Centered Teaching Model

As one of the core components of teaching activities, teaching methods are a necessary condition and important guarantee for achieving teaching tasks, improving teaching quality, and teaching efficiency. Good teaching methods not only make teaching content more vivid and accessible but also stimulate students' interest in learning, improve learning methods, and enhance learning efficiency. Teaching methods are not only the means for teachers to impart knowledge but also an important way for guiding students in self-learning, independent thinking, and fostering innovative capabilities.

Teaching public foundational courses at the university level is facing crises in terms of both teaching content and teaching methods [8]. Learning during the high school stage tends to have uniform learning content, uniform learning objectives, and roughly similar teaching methods, lacking diversity and personalization. This makes it difficult for students to develop independent learning habits and abilities. However, higher education's demands for specialized training and

diversified development require college students to quickly change their learning methods, adapting to differentiated learning and independent learning requirements. Based on problem-oriented and outcome-oriented teaching methods, the "12345" teaching model has been constructed, as shown in Figure 4.

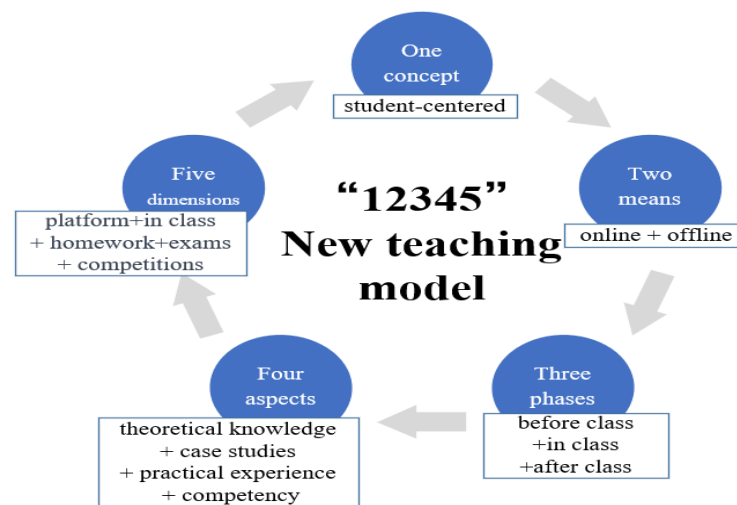


Figure 4. The "12345" Teaching Model

4.1 One Concept. The symbol "1" signifies a steadfast commitment to a student-centered approach.

In all aspects of teaching, educators are required to consistently consider students' needs, receptiveness, and individual differences. Educators no longer act as the ultimate authorities on knowledge but as designers of knowledge dissemination. They design and organize instructional content and related activities to help students cultivate proactive and cooperative inquiry-based learning. Students can effectively acquire knowledge and skills. According to this model, teachers have transitioned from being mere knowledge transmitters to guides in knowledge acquisition for students. Through guided instruction, educators help students clearly define learning objectives, master learning methods and skills, and foster critical thinking and problem-solving abilities. Teachers are now facilitators of learning, creating a positive learning environment that encourages active participation, collaboration, exploration, and innovation. They assist students in overcoming difficulties and challenges encountered during learning and practice. Teachers also assume the role of evaluators, conducting comprehensive and effective assessments of students' academic progress. Helping students understand their learning trajectory and areas of improvement belongs to the teachers' role. Students need making timely adjustments to teaching content and methods.

4.2 Two Means. The "2" represents the combination of two teaching means: online and offline.

Blended learning is a teaching model that combines traditional classroom instruction with online learning. This "online" and "offline" teaching model leverages the guidance, inspiration, and support of traditional in-person teaching while utilizing online classrooms through the internet to enhance students' active participation.[9] This approach optimally utilizes the advantages of traditional in-person classrooms and the expansive capabilities of online classrooms. It seamlessly integrates pre-class, in-class, and post-class teaching, not only consolidating the roles and tasks of teachers and students as traditionally defined but also significantly reinforcing and enhancing teaching in online classrooms. This approach aids in the cultivation of students' self-directed learning abilities and personalized learning.

In the pre-class preparation stage, students can preview the content to be covered in class using online resources, preparing themselves for the upcoming lesson. During class, teachers guide students in thinking, discussing, and exchanging ideas while addressing questions that arise during the learning process. Additionally, teachers use a flipped classroom approach, enabling students to engage in self-directed learning using online resources and focusing on problem-solving and discussion in physical classrooms. This approach maximizes the efficiency of students' learning. In

the post-class stage, teachers design practical tasks for students based on the classroom and online learning experiences.

4.3 Three Phases. The "3" signifies the three vital phases of learning: pre-class, in-class, and post-class.

In the pre-class phase, educators utilize online platforms to combine platform resources with the theoretical knowledge that needs to be mastered in the classroom. They communicate pre-class preparatory content and learning requirements to students. Based on their individual circumstances, students engage in self-directed learning using multi-modal, multi-dimensional, and personalized resources on the platform. They may also complete team projects while identifying questions that arise during their learning. These questions are submitted to the teacher before class. Educators use this feedback to design suitable teaching methods and organize relevant classroom activities.

In the in-class phase, educators conduct effective teaching activities based on the pre-class feedback, addressing students' questions, and incorporating various forms of practice and practical exercises to assess students' comprehension. After having well-prepared from their pre-class work, students follow the rhythm of the lesson closely, focus on key and challenging aspects of the curriculum, and significantly improve their in-class learning outcomes.

In the post-class phase, educators assign online homework to assess students' learning outcomes. They may also engage in offline practical activities related to the acquired knowledge. Students can continue learning seamlessly on the online platform, nurturing their self-directed learning and continuous inquiry skills.

4.4 Four Aspects. The "4" denotes the integration of four aspects in teaching content: "theoretical learning, case guidance, practical application and integration of literacy." The development of these four dimensions necessitates educators to effectively incorporate case analyses in course design and organization. This guides students to apply theoretical knowledge to practical scenarios through problem analysis and solution exploration. Through vivid case illustrations, students can tangibly perceive the efficacy of theoretical knowledge in guiding practical applications. This cultivates their ability to address real-world issues.

Additionally, the fusion of theoretical learning and case analysis inspires students to comprehend and learn humanistic knowledge and holistic literacy. It gradually equips them with a strong comprehensive literacy. Therefore, educators should focus on students' holistic development, cultural literacy, and the cultivation of a healthy personality in course design, teaching methods, and course content. This approach aims to realize holistic education, assist students in forming correct value systems, life outlooks, and worldviews.

The amalgamation of these four dimensions in teaching content results in a comprehensive enhancement of students' knowledge, skills, and comprehensive literacy. This enables them to better adapt to the needs of societal development, ultimately boosting their competitiveness in society. Moreover, this approach aims to produce more highly qualified individuals with solid professional competencies, a strong sense of social responsibility, innovative spirit, and team collaboration skills, which is a crucial goal of higher education.

4.5 Five Dimensions. The "5" pertains to the evaluation of student learning from five dimensions: "platform self-study, classroom performance, post-class assignments, and various examinations, practical and innovative competitions." "Without an effective mechanism to incentivize and constrain student learning, many students may lose their motivation to study public foundational courses." [10] This research conducts a comprehensive assessment of students through these five dimensions.

The model across these five dimensions combines formative and summative assessment, integrating various aspects. The five aspects are online and offline learning, textbooks and platform resources, self-directed and receptive learning, the development of practical application and innovative capabilities. This comprehensive approach facilitates a just and comprehensive assessment of learning outcomes. Educators assign varying weight-age to these five dimensions, culminating in the holistic evaluation of students.

Platform self-study: Through the statistical features of online learning platforms, educators can gain insights into students' autonomous learning states and abilities based on factors such as learning duration, progress, and quiz results.

Classroom performance: Observing students' classroom behaviors allows educators to assess their comprehension levels and learning outcomes. Classroom performance assessment encompasses multiple quantitative indicators, such as answering questions, participating in discussions, and solving problems.

Post-class assignments: Post-class assignments are pivotal for reinforcing students' understanding and application of the knowledge acquired in the classroom. By grading these assignments, educators can evaluate students' understanding and application of classroom knowledge.

Various examinations: Examinations are a common method for evaluating students' grasp of knowledge and their application skills. These include monthly tests, mid-term exams, and final exams.

Extracurricular practical activities and innovative competitions: Extracurricular practical activities are crucial for assessing and improving students' abilities. Through participation in these activities, students can apply their acquired knowledge to real-life scenarios, enhancing their practical skills and comprehensive qualities. The evaluation of extracurricular activities includes aspects such as project outcomes, report writing, and teamwork. Innovative competitions encourage students to unleash their creativity and innovation spirit. The assessment criteria in these competitions are multifaceted, aimed at comprehensively evaluating students' innovation, practical, and team collaboration capabilities.

Evaluating students across these five dimensions offers a comprehensive, objective, and fair assessment of their learning outcomes. This approach aids in better understanding students' learning situations and capabilities. It motivated them to actively pursue further learning and enhanced their comprehensive learning abilities.

5 Student-Centered Teaching Team Developments

The student-centered stratified classification teaching reform and multidimensional teaching models set higher requirements for individual educators. It covered their teaching proficiency, teaching abilities, professional cognition, and comprehensive literacy. The days of individual teaching are no longer sufficient to fulfill teaching tasks and the high-quality development of talent. Therefore, the construction of teaching teams is imperative.

The development of teaching teams holds significant implications for improving teaching quality, fostering the growth of young teachers, enhancing teaching management, advancing teaching reform and innovation, strengthening teaching research, and more. Teaching team development, guided by a student-centered approach, underscores the importance of establishing a culture of cooperation, enhancing teachers' professional qualifications, strengthening communication and collaboration skills, nurturing innovative spirit, addressing individual student needs, promoting teacher professional development, and establishing a robust evaluation mechanism. Only teaching teams with these characteristics can better serve students' learning and development. The structure of teaching team development is illustrated in Figure 5.

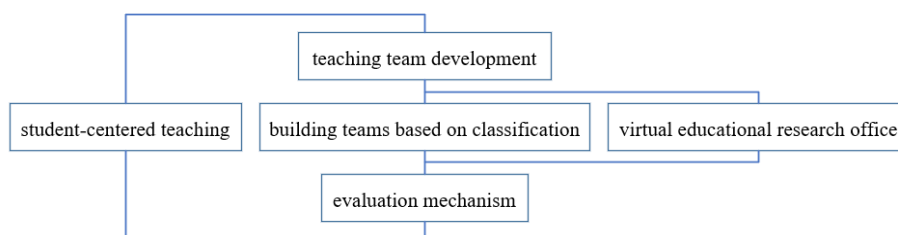


Figure 5. Teaching Team Development

5.1 Formation of Categorized Teaching Teams. Based on the categorization of students into major groups, teachers are organized into corresponding instructional teams. A collaborative culture is cultivated among teachers to foster a conducive environment for mutual support. It made teacher exchange their ideas, and collaborative problem-solving among professional educators. These teacher teams should frequently arrange various exchange activities where they can share their perspectives, experiences, and methodologies related to curriculum design, teaching organization, key teaching points, pedagogical skills, practical cases, instructional challenges, and professional requirements, thereby better addressing students' learning needs.

Teaching teams offer several advantages:

Teaching teams Sharing of Educational Resources: including teaching materials, methods, and strategies. This enriches the curriculum, enhances teaching quality, and ensures that students have diverse learning experiences.

Curriculum Planning and Coordination: Teaching teams collaboratively plan the curriculum to ensure coherence and alignment among different courses. They develop teaching plans based on student needs and subject requirements to achieve learning objectives.

Student support: Teaching teams collectively focus on students' learning and personal development, providing necessary support. They work together to develop personalized learning plans, help students overcome learning obstacles, and encourage their involvement in classrooms and campus activities.

Teaching feedback and improvement: Teaching teams regularly conduct teaching assessments and feedback sessions, jointly discussing classroom effectiveness, sharing successful teaching practices, and exploring ways to enhance teaching methods and strategies to better meet student needs.

Enhancing teaching effectiveness and quality: Through internal team communication and knowledge sharing, teachers collaboratively explore teaching strategies and methodologies. This continuous improvement aims to meet students' learning needs more effectively, raising teaching quality and effectiveness.

5.2 A Virtual Educational Research Office. To meet the demand for seamless integration between foundational and future specialized courses, it is imperative to ensure that foundational courses provide support for specialized courses. The development of categorized foundational course teaching necessitates deep collaboration among teachers of foundational courses within the institution, specialized course instructors from the institution, teachers from external institutions offering foundational and specialized courses, and professionals from industry. This requires the establishment of a virtual educational research office that operates across disciplines, institutions, and domains. This virtual research office organizes regular discussions, shares resources, and facilitates in-depth exchanges among relevant personnel. Teachers effectively assist foundational course instructors in enhancing their professional capabilities and establishing cutting-edge pedagogical insights.

Regular exchange: To maintain the vibrancy and effectiveness of the virtual educational research office, administrative bodies periodically release topics for discussion, resource sharing, and sharing of advanced experiences related to educational issues.

Conduct virtual meetings or seminars: Regular virtual meetings, offline seminars, or webinars are held to encourage more in-depth discussions and collaboration among front-line teachers and various stakeholders.

Interdisciplinary collaboration: The teaching teams in the virtual educational research office comprise educators and experts from different disciplinary domains, promoting interdisciplinary collaboration and learning in educational activities. This contributes to providing more comprehensive, in-depth, and interdisciplinary learning resources for students, enabling them to better understand and grasp relevant knowledge by integrating concepts and skills from various disciplines.

5.3 A Robust Evaluation Mechanism. Teaching teams should establish a reasonable evaluation mechanism for comprehensive, objective, and fair assessments of teaching quality and teacher performance. This evaluation serves the purpose of problem identification and improvement.

The role of teaching teams in teaching is multifaceted. It focuses not only on enhancing teaching effectiveness and quality, promoting teacher professional development, and building a more sound teaching workforce but also on significantly increasing student engagement and learning outcomes. This approach fosters subject exchange and teamwork.

6. Summary

The series of student-centered teaching reforms initiated by the School of Freshmen of Xi'an Technological University have effectively met the diverse needs of individual students. They have led to increased self-awareness and enthusiasm among students, resulting in a general improvement in academic performance. The pass rate for the College English Test Band 4 (CET-4) among first-year students increased more than 52% within four years. Moreover, students' independent learning abilities, practical skills, and innovative application capabilities have been enhanced.

First-year students have exhibited a strong interest in participating in various subject competitions, with over 80% of them actively engaging in such competitions and achieving outstanding results. The students have also achieved significant success in competitions, breaking a 20-year record of no national-level awards. In 2022, the students participated in the Mathematical Contest in Modeling (MCM) for the first time, with eight teams competing. They achieved a 100% award rate, receiving three Meritorious (M) awards, one Honorable Mention (H) award, and four Successful Participant (S) awards.

Furthermore, guided by the student-centered philosophy, the teaching team of the school has played a vital role and continuously improved, producing a group of excellent teachers with high teaching standards and strong teaching abilities. In the past three years, 15 teachers have won first and second prizes in university-level and provincial-level teaching competitions. Additionally, one teacher received a second prize in a national-level competition.

This practical evidence demonstrates that student-centered teaching, which places students' needs, interests, and learning styles at the core of education, can facilitate more effective learning. It fosters individualized learning, promotes the development of practical skills and innovative thinking, and lays a solid foundation for students' future professional studies. This approach instills good self-directed learning habits, equips students with lifelong learning capabilities, and contributes to the cultivation of high-quality talent.

Acknowledgements

The paper is a research outcome of the Special Project for Philosophy and Social Sciences Research in Shaanxi Province, with the project code 2023HZ296.

References

- [1] Ministry of Education of the People's Republic of China. Opinions on Deepening Undergraduate Education and Teaching Reform to Significantly Improve Education Quality of College Students [Z]. 2019-10-08.
- [2] Ministry of Education of the People's Republic of China. National Medium and Long-term Educational Reform and Development Plan (2010-2020) [Z]. 2010-07-29.
- [3] Ministry of Education of the People's Republic of China. Implementation Opinions on Building First-Class Undergraduate Courses [Z]. 2019-10-30.
- [4] Jianjiang Liu: Dewey's Research on a Student-Centered Moral Subject View [D]. Tianjin Normal University. 2008-05.

- [5] Carl Ranson Rogers. Client-Centered Therapy [M]. 1951.
- [6] Ruiyan Guo, Dai Rui: Construction and Optimization of a Composite Public Curriculum System in Higher Education Institutions, Heilongjiang Higher Education Research. 2017(04), p. 103-105.
- [7] Xiaoping Wang, Yuling Liu, YiyonLiang, Kaiwei Wang, Yuanfang Lin: Reforms and Practices in Pedagogy, Study Methods, and Examination Methods Centered on Students, China University Teaching. 2017(06), p. 73-76.
- [8] Xiaojian Zhang: Crisis and Innovation in University Public Foundation Course Teaching, Education and Occupation. 2008(20), p. 96-97.
- [9] Meng Zhang, Yang Yang, Shunyi Liu: Exploration of a Hybrid Teaching Model Based on the Bidirectional Feedback Principle – Taking a University Mathematics Public Foundation Course as an Example, Modern Educational Technology. 2020, 30(12), p. 119-125.
- [10] Jinshi Liu: Analysis of Innovative Student Evaluation Mechanisms in Large Classroom Teaching of Public Foundation Courses—Taking Microeconomics as an Example, China University Teaching. 2013(06), p. 81-83.