Discussion on the SAKIO-Based "Five-in-One" Blended Teaching Reform

Guangwei Zhang[1], Fuguang Du[1], Yuzhu Ma[2], Fang Shen[1], Yan Liu[3]

[1] Tangshan Normal University, Tangshan 063000, Hebei, China

[2] School of Clinical Medicine, North China University of Science and Technology, Tangshan 063210, Hebei, China

[3] Department of Pathology, School of Basic Medical Sciences, North China University of Science and Technology, Tangshan 063210, Hebei, China

DOI: 10.32629/jher.v5i5.2927

Abstract: In the context of high-quality and connotative development of higher education institutions, this study addresses the characteristics of talent demand in the new era, adhering to the educational philosophy of "people-oriented, moral education." A "Five-in-One" blended teaching model is proposed and exemplified with the "Cartography" course. The study elaborates on optimizing teaching design, refining teaching content, and improving teaching schemes. Application practices demonstrate that a teaching model integrating professional courses with ideological and political education, combining theory with practice, and deriving outcomes from interest fosters a balanced development in morality, intellect, physique, aesthetics, and labor. This model significantly enhances students' learning motivation and course participation, stimulates their self-directed learning and innovation, and hones their deep thinking and collaborative skills, thus substantially improving teaching quality and achieving teaching objectives. The approach provides valuable insights for teaching reforms in similar disciplines.

***Keywords*:** Five-in-One; blended teaching; teaching reform

1. Introduction

To achieve high-quality and connotative development in higher education, continuous improvement of teaching concepts and methods is essential. Scholars have proposed various teaching methods from different perspectives, aligned with educational practice and contemporary needs, such as the OBE-based teaching model [1], SPOC-based teaching model [2], CDIO-based teaching model [3], and teaching reforms in the contexts of emerging engineering [4], innovation and entrepreneurship [5], and high-order skills [6]. Significant integration of ideological and political education into the classroom has also been observed [7-8], especially during the pandemic, when online learning became the primary method of instruction. While these approaches have been effective and laid a solid foundation for further educational reform and practice, they often focus on one or a few aspects of student development, lacking a comprehensive educational approach.

As higher education reforms advance in depth, there is a concurrent shift towards a systemic, comprehensive, high-quality, and connotative direction. Thus, many scholars have begun summarizing the strengths and weaknesses of past teaching methods and integrating their advantages, leading to widespread adoption of blended online-offline teaching practices [9-11]. Although these have shown some success, they are not yet systematic, with varying implementation results across different universities. In the post-pandemic era, higher education is increasingly systematized and connotative, prompting a need for teaching model reform.

This paper analyzes the characteristics of the full process of talent cultivation in higher education institutions, especially the growth patterns of contemporary university students, to systematically optimize the above teaching methods and propose the "Five-in-One" educational model. This model's teaching reform is explored using the "Cartography" course as a case study.

2. SAKIO "Five-in-One" Teaching Model

Based on the educational philosophy of being people-oriented and emphasizing moral education, the SAKIO "Five-in-One" educational concept is proposed, encompassing Spirit, Action, Knowledge, Interest, and Outcome.

Spirit (Thought and Soul Cultivation). This involves enriching students' minds with advanced culture and thought, shaping their worldview, values, and beliefs, and cultivating faith and patriotism. It aims to develop socially responsible individuals with firm ideals aligned with national development needs.

Action (Ideal and Practice). Through professional guidance and scientific direction, students clarify their development paths and goals, enhance professional pride, and formulate rational career plans and actionable strategies, maximizing their

potential.

Knowledge (Foundation Building to Meet Needs). By optimizing course design and content, and employing diverse teaching methods, students are equipped with the knowledge and skills required to meet societal demands, solving professional problems with theoretical and practical abilities.

Interest (Generating Driving Force). Understanding students' growth patterns and learning characteristics, the model uses engaging methods to foster learning interest, encouraging active learning and exploration to enhance intrinsic motivation.

Outcome (Capability Formation). Outcome-oriented and capability-focused, this approach employs varied teaching methods to develop skills that meet contemporary and individual needs, such as professional, practical, communication, and innovation skills, fostering well-rounded future builders of society.

These five components are interrelated and mutually reinforcing, with moral education at the center as the core educational purpose. SAKIO provides the five essential steps to achieve the goal of nurturing talent, where each element influences the others.

3. Course Design

The course design revolves around cultivating well-rounded talents who excel in moral, intellectual, physical, aesthetic, and labor education in the new era. It aims to effectively enhance the quality of education and teaching, adhering to a student-centered and teacher-guided teaching philosophy. The design of the SAKIO “Five-in-One” teaching content is detailed as follows:

3.1 Ideological Cultivation (Moral Education)

Strengthening the ideological and moral construction of university students is not only the goal of ideological and political education but also one of the objectives of professional courses. Good moral character is the cornerstone of personal success and the guarantee of great achievements. Therefore, the curriculum integrates ideological and political content to subtly influence students' minds, allowing them to appreciate the achievements of ancient Chinese civilization, the brilliance of past generations, and the hard-earned nature of today's life, thereby cherishing their precious youth.

To cultivate students' correct worldview, outlook on life, and values, the course combines the political, cultural, and educational aspects of maps, as well as vivid cases, to enhance students' awareness of national territory and their sense of patriotism.

3.2 Knowledge Transmission (Intellectual Education)

Based on the characteristics of contemporary university students, such as flexibility, short attention spans, randomness, repetition, and portability in learning, the course content transforms the theoretical system into multiple interconnected knowledge points that can function independently. Taking "Cartography" as an example, this course is a foundational core course for surveying, geography, and even earth sciences and management disciplines, serving as a crucial prerequisite for subsequent courses. However, as an interdisciplinary subject with extensive coverage and numerous knowledge points, it combines theory and practice. In traditional teaching, students often find the theory abstract, such as map projection, measurement coordinate systems, and coordinate transformation.

To enhance teaching effectiveness, the course incorporates various teaching resources, including micro-lectures, MOOC resources, online open courses, recorded lectures, and simulation teaching systems. A blend of online and offline learning, in-class and out-of-class activities, and theoretical and practical integration is utilized. Specifically, online platforms like Superstar and Rain Classroom, interactive teaching, and flipped classroom methods are employed to achieve learning objectives and foster student autonomy.

3.3 Enhancing Learning Execution (Physical Education)

A strong physique and optimistic mindset are essential for overcoming setbacks and facing challenges. After the grueling college entrance examination, many students lose their motivation upon entering university, often neglecting their studies and experiencing anxiety or fear when confronting specialized courses, leading to poor academic performance.

Therefore, the course design increases field practice and regular testing, using competitions to motivate students. Practice shows that this approach effectively enhances students' execution abilities, strengthens their physical fitness, and cultivates a positive learning attitude.

3.4 Cultivating Interest (Aesthetic Education)

Interest drives learning, and it can be cultivated. Aesthetic education plays a crucial role in enhancing interest. To stimulate students' interest, the course adopts graphical teaching methods, showcasing colorful maps that encompass

landscapes, oceans, and all aspects of the world. Supported by short videos, multimedia animations, relatable language, and visual symbols, cartography theory is seamlessly integrated, allowing students to immerse themselves in the beauty of maps. This significantly increases students' interest and engagement.

3.5 Integrating OBE Concepts into Course Evaluation (Labor Education)

Amidst adverse social influences such as live streaming and online gaming, many students dream of becoming internet celebrities, leading to a severe decline in academic motivation. University educators must guide students towards a proper understanding of work values, emphasizing that labor creates value and knowledge generates wealth. Research shows that knowledge and ability correlate with wealth; unlike temporary phenomena like internet fame, knowledge and skills provide lasting value.

Thus, the course design incorporates challenging open-ended tasks linked to faculty research projects or professional competitions, requiring students to collaborate and put in substantial effort to achieve their goals. The resultant outputs directly translate into rewards or tangible benefits, helping students truly understand the value of knowledge and labor.

A successful teaching model should be practical, replicable, and assessable. To scientifically evaluate teaching quality and gauge student outcomes under this model, a comprehensive assessment system has been developed. This includes considerations of course emphasis, class participation (interaction and engagement), practical skills, innovation, use of resources, assignment completion, expression skills, exploration abilities, exam results, and generated achievements. Scoring is based on a 100-point scale, with specific score distribution as shown in the table below.

Table 1. Course Evaluation Index and Score Proportion

No.	Course Evaluation Index	Score (Total 100)
1	Course Emphasis	3
2	Class Participation	5
3	Course Resource Utilization	8
4	Assignment Completion	8
5	Practical Operation Ability	8
6	Expression Ability	5
7	Exploration Ability	5
8	Innovation Ability	8
9	Exam Results	40
10	Achievement Output	10

From Table 1, it is evident that the course assessment is not solely determined by the final exam scores but emphasizes an overall evaluation throughout the process. Course Emphasis mainly reflects student attendance and leave records; Class Participation focuses on student interaction with the teacher and their responsiveness in class; Course Resource Utilization reflects students' self-study habits, including pre-class preparation and post-class review, as well as their use of course resources and extended materials; Assignment Completion assesses the degree of students' understanding of theoretical knowledge and their ability to complete tasks independently; Practical Operation Ability measures hands-on skills, particularly proficiency in using experimental instruments and software; Expression Ability evaluates students' communication and verbal skills, often using flipped classroom methods; Exploration Ability is tested through guided questions and open-ended assignments, encouraging students' independent exploration of learning; Innovation Ability is assessed through group discussions and collaborations to gauge different perspectives on problems; Exam Results mainly reflect students' grasp of theoretical knowledge through closed-book exams; Achievement Output assesses students' comprehensive qualities and ability to apply knowledge, through participation in various contests such as school drawing competitions, national and provincial academic competitions, remote sensing competitions, writing contests, and innovation and entrepreneurship projects.

4. Course Implementation Ideas

Since the "Cartography" course includes ideological content, theoretical courses, and practical courses, the implementation is elaborated on in three main aspects:

4.1 Implementation of Ideological and Political Education in Professional Courses

Ideological and political education in professional courses differs from that in political theory courses; the former should not overshadow the transmission of professional knowledge but should integrate naturally. Considering the unique

nature of ideological and political education in professional courses, the implementation principles are as follows:

(1) Integration of Ideological Content with Professional Knowledge.

Ideological content in professional courses must be organically integrated with professional knowledge to form a unified system; otherwise, it can feel disconnected. For example, in teaching leveling measurement, a promotional video on Mount Everest measurement is used to introduce leveling methods, followed by explanations of its principles and field operations, blending it with the spirit of perseverance and courage.

(2) Contextualization of Ideological Content.

Ideological content must touch the students' hearts to inspire patriotism and national pride. To achieve this, the teaching content uses familiar life scenarios to gradually introduce ideological themes, such as using the identification of problematic maps to raise awareness of national territory and the political, cultural, and educational significance of maps.

(3) Storytelling of Ideological Content.

Stories can convey events vividly and artistically, making them more acceptable, memorable, and impactful than rigid theories. Therefore, classic humanistic stories, biographies, historical anecdotes, or self-created short stories can be used to inspire students, fostering a sense of national pride, collective honor, and professional confidence, planting seeds of noble ideals and thoughts.

4.2 Implementation of Theoretical Courses

To ensure high-quality learning of theoretical knowledge, a blended teaching method with multiple complementary steps is adopted:

(1) Pre-Class Preparatory Tasks.

Teachers upload relevant teaching resources, such as syllabi, key points, teaching materials, videos, and quizzes, on the online platform and assign pre-study tasks for students to complete on their devices.

(2) Targeted Classroom Teaching.

Based on students' performance and responses, teachers focus on difficult points and engage students through interactive sessions, followed by assigning open-ended homework.

(3) Independent or Collaborative Completion of Assignments.

Assignments often pose significant challenges, requiring students to research extensively or deeply study theoretical knowledge, thus fostering self-learning and teamwork skills.

(4) Flipped Classroom.

Teachers assign various topics, such as frontier technologies, the stories of senior scientists, equipment development, and cross-industry applications. Student groups research, discuss, write reports, and present their findings in class, with the teacher providing feedback.

(5) Brainstorming and Debate.

Teachers introduce debate topics based on everyday scenarios, such as "Is Google Maps a good or bad development?" Students are divided into groups to discuss for about 40 minutes before forming pro and con sides for the debate. This method stimulates enthusiasm, tests acquired knowledge and instant learning abilities, and enhances students' critical thinking, language skills, and adaptability.

4.3 Implementation of Practical Courses

(1) Equipping Skills.

Practical courses are optimized to focus on essential professional skills such as instrument operation, map drawing, spatial information analysis, and internet map programming. Students are encouraged to participate in professional competitions, enhancing hands-on and problem-solving skills to boost future competitiveness.

(2) Enhancing Physical Fitness.

To meet physical requirements for field tasks, students are advised to engage in running, climbing, and weight training a month in advance to better handle tasks like remote sensing interpretation, terrain measurement, and resource surveys.

(3) Building Resilience.

Many students lack resilience, and facing challenges often causes psychological strain. Therefore, practical courses emphasize extensive field training and prolonged indoor tasks, instilling the value of hardship as a formative experience crucial for building a sound worldview and strong future foundation.

(4) Enjoying the Journey.

Practical courses are designed with small, team-based tasks that promote collaboration and a sense of accomplishment. Students often reflect on their efforts as a deeply rewarding experience that blends hard work with joy, creating lasting

memories and laying a solid foundation for their future careers.

5. Main Conclusions

This paper, based on a summary of previous teaching methods, proposes the SAKIO "Five-in-One" teaching model centered on the "people-oriented, moral education" principle. This model effectively balances the comprehensive development of moral, intellectual, physical, aesthetic, and labor education, as reflected in the following.

(1) The teaching model accommodates contemporary students' growth characteristics, using student-friendly methods to integrate ideological education into professional classes, guiding students toward correct values.

(2) The teaching model employs a variety of complementary blended teaching methods, enhancing learning outcomes, professional knowledge, and independent problem-solving abilities, and has been well received by students.

(3) The teaching model reinforces physical fitness, aesthetic skills, and labor awareness, improving students' physical fitness, innovation consciousness, and scientific research capabilities, thereby promoting holistic student development.

Acknowledgments

This work was supported by the Educational and Teaching Reform Project of Tangshan Normal University (Project No.: 2019JG019).

References

[1] Yan Guanfa, Zhang Dongyou, Qi Shaoqin. Teaching Reform Practice of Cartography Course Based on OBE Education Concept [J]. Journal of Higher Education, 2021, 7(30): 130-133.
[2] Xu Jia, Li Hao, Yang Biao. Design and Practice of Blended Teaching of Photogrammetry Course Based on SPOC [J]. Surveying and Spatial Geographic Information, 2022, 45(08): 9-12.
[3] Guo Qiangqiang, Wang Lihong, Yu Jing. Research on Teaching Reform of Chemical Safety Evaluation Based on CDIO Model [J]. Guangzhou Chemical Industry, 2020, 48(07): 175-177.
[4] Lu Jing, Yuan Liyun. Exploration of Blended Teaching Model for "Material Mechanics" in Local Universities under the Background of New Engineering [J]. Science and Technology and Innovation, 2022(17): 34-36.
[5] Cui Ming, Yang Dan, Zhang Xuejun. Countermeasures and Suggestions for Entrepreneurship Education Reform in Hebei Province Universities from the Perspective of "Innovation and Entrepreneurship" [J]. Management Observer, 2018(28): 146-147.
[6] Li Yingjie, Zuo Jianping, Liu Jie, Zhang Zhihui, Liu Dejun. Exploration of Advanced Goals for Basic Courses Oriented to Engineering Mechanics Majors [J]. Education Teaching Forum, 2022(23): 73-76.
[7] Wu Qingqing, Yang Yang. Exploration and Practice of Integrating Ideological and Political Elements into Photogrammetry and Remote Sensing Courses [J]. Heilongjiang Science, 2021, 12(23): 49-51.
[8] Jiang Nan, Chen Minjie, Deng Shujun, Xie Limin. Blended Teaching Mode of Cartography Classification with Integrated Ideological and Political Education [J]. Bulletin of Surveying and Mapping, 2022(S1): 57-61.
[9] Chen Yan. Exploration of Online and Offline Blended Teaching of Information Theory and Coding Based on Problem-Guided Approach [J]. Journal of Higher Education, 2022, 8(24): 132-135.
[10] Mei Cuiping. Design of an Offline "Gold Course" in English Based on the "Output-Oriented Approach"—A Case Study of the Lesson Green Banana [J]. Journal of Tangshan Normal University, 2021, 43(04): 133-138.
[11] Sha Jingrong, Tang Tianqi, Shu Hong, Shen Sha. Study on the Effectiveness of Blended Teaching with Integrated Ideological and Political Elements to Promote Higher-Order Thinking [J]. China Educational Technology, 2022(08): 68-74.