

BTEP: Bloom's taxonomy & ideological-political education innovation in exercise physiology

Daniel Wilson^{1, a}, Ashley Taylor^{1, b}, Kang Yongxin^{2, c, *},

¹California Institute of Technology 1200 East California Boulevard, Pasadena, California 91125, USA

²Shokz Co., Ltd., No. 009 Gao Xin South 1st Road, Nanshan District, Shenzhen, Guangdong Province, 518057, China
a.daniel_uf98@outlook.com, b.ashley_87fjg@gmail.com, c.yongxin_kang_4648@163.com

***Corresponding Author**

Abstract: General Secretary Xi Jinping has emphasized that fostering virtue through education is the core mission of education, and that running ideological and political theory courses well is key to addressing fundamental educational challenges. Using the Exercise Physiology curriculum as a vehicle, this paper proposes a five-tiered progressive framework for integrating ideological and political education into subject teaching. Grounded in Bloom's Taxonomy of Educational Objectives in the Affective Domain, the study establishes specific educational goals centered on scientific spirit, ecological civilization, and cultural confidence. Through pedagogical strategies such as contextualized scenario creation and interactive discussions, the course achieves an organic integration of knowledge impartation with value guidance. The findings indicate that this approach effectively enhances student feedback regarding knowledge acquisition, skill development, and affective attitudes. This research provides practical case studies and theoretical support for the implementation of ideological and political education across higher education disciplines.

Keywords: Exercise Physiology, Ideological and Political Education, Bloom's Taxonomy, Instructional Design

1. Introduction

General Secretary Xi Jinping, at the National Conference on Ideological and Political Work in Universities, emphasized that ideological and political education must run through the entire process of teaching and talent cultivation to achieve holistic and all-round education, thereby opening new prospects for China's higher education development [1]. The article "Ideological and Political Theory Courses Are the Key to Implementing the Fundamental Task of Fostering Virtue Through Education," published in Qiu Shi Journal, points out that delivering high-quality ideological and political theory courses is crucial for fully implementing the Party's educational policy and addressing the fundamental questions of "whom to educate, how to educate, and for whom to educate" [2]. Furthermore, the Guidelines for Curriculum-Based Ideological and Political Education in Higher Education Institutions, issued by the Ministry of Education in 2020, clarifies that value shaping, knowledge impartation, and competency development must be integrated into an indivisible whole [3]. Against this backdrop, effectively integrating ideological and political education into specialized subject courses has become a critical issue in the field of higher education [4].

As an interdisciplinary subject, Exercise Physiology integrates knowledge from physiology, sports science, and biomechanics to investigate the physiological mechanisms and functional changes of the human body during physical activity. The course requires students to master foundational theories and applied knowledge, with a strong emphasis on cultivating critical thinking, problem-solving abilities, and scientific research literacy [5]. However, in practical teaching, a pressing challenge remains regarding how to balance cutting-edge academic exploration with the deepening of educational content, while simultaneously guiding students to establish correct worldviews, outlooks on life, and values. Using the Exercise Physiology curriculum as a vehicle, this study proposes a five-tiered progressive model for integrating ideological and political education. Grounded in Bloom's Taxonomy of Educational Objectives in the Affective Domain, the study aims to achieve an organic integration of knowledge impartation and value guidance through specific instructional designs. This research provides practical case studies and theoretical support for the implementation of ideological and political education in higher education.

2. The intrinsic requirements of the exercise physiology curriculum

As a multidisciplinary subject, Exercise Physiology focuses on the physiological mechanisms and functional changes of the human body during physical activity. The curriculum addresses three core dimensions—knowledge, competency, and values—emphasizing both knowledge impartation and ability cultivation, while integrating elements of ideological and political education. This approach aims to guide students in establishing correct values and foster high-caliber, interdisciplinary talents [6]. Table 1 outlines the specific requirements across these three dimensions.

3. Barriers to integrating ideological education into exercise physiology

Although the Ministry of Education has promoted the integration of ideological and political education with professional curricula since issuing the Implementation Guidelines for Enhancing the Quality of Ideological and Political Work in Colleges and Universities in 2017 [7], several challenges remain in the implementation of ideological and political education within Exercise Physiology [8]. First, there is insufficient exploration of ideological elements. Some instructors struggle to identify relevant elements within the curriculum and lack clarity on how to integrate them naturally into instructional design. Second, teaching methodologies are monotonous. Current pedagogy relies heavily on traditional lecturing, lacking diverse instructional strategies, which leads to suboptimal outcomes in value education. Third, student engagement is low. Students exhibit limited identification with and participation in curriculum-based ideological education, thereby weakening its practical effectiveness.

These issues highlight the need for more systematic theoretical support and practical guidance in the implementation of ideological and political education. Therefore, grounded in Bloom's Taxonomy of Educational Objectives in the Affective Domain, this study proposes a five-tiered progressive model for curriculum-based ideological and political education. By employing diverse instructional strategies—such as contextualized scenario creation and interactive discussions—the research aims to achieve an organic integration of knowledge impartation with value guidance, thereby offering novel approaches and methodologies to address the aforementioned challenges.

4. An affective domain-based model for curriculum ideological education

Bloom's affective domain taxonomy of educational objectives divides emotional development into five hierarchical levels: receiving, responding, valuing, organizing, and characterizing by a value or value complex [9]. Based on this theory, a five-layer progressive model of curriculum-based ideological and political education is constructed, achieving the organic integration of knowledge transmission and value guidance through the gradual deepening of emotional development. In implementing ideological and political education in Exercise Physiology courses, authentic cases closely related to students' lives and athletic practices should be selected to stimulate interest, such as athletes' training stories and sports hot topics [10]. Instruction follows the principle of student-centeredness with teacher guidance, integrating ideological and political elements according to the characteristics of knowledge. Utilizing intuitive methods such as experiments and case analyses, combined with athletes' struggles and sportsmanship, enhances emotional experiences and integrates emotion with context, helping students establish correct sports concepts. Modern teaching methods such as the divided classroom and flipped classroom are employed, deepening understanding through group discussions and role-playing to enhance the effectiveness of ideological and political education. Cases of athletic training and athletes' experiences are introduced to achieve the integration of reason and context (see Table 2 for the specific model design).

5. Instructional design for civic education in exercise physiology

To achieve the organic integration of knowledge transmission and value guidance, this course has designed six instructional modules (see Table 3). Each module integrates ideological and political elements through specific cases and teaching strategies to cultivate students' comprehensive qualities. This instructional design employs stories of athletes' perseverance and scientific research pioneers' breakthroughs to create contextual scenarios that stimulate students' learning motivation. Through interactive formats such as group discussions and role reversal, a thinking platform is established to deepen

students' understanding of knowledge and enhance their collaborative abilities. Through multi-dimensional case analysis, dialectical thinking is cultivated from perspectives such as sports science and scientific innovation. Finally, through value guidance that integrates ideological and political elements, the dual enhancement of professional teaching and value leadership is achieved, cultivating new-era talents who possess both professional competencies and social responsibility.

Table1 intrinsic requirements of exercise physiology courses

Dimension	Specific Requirements	Ideological and Political Connection
Knowledge	Master foundational theories and practical application knowledge of Exercise Physiology; understand the functional changes of various human body systems during exercise, energy metabolism mechanisms, muscle activity principles, and exercise adaptations under special environments	Through the explanation of cutting-edge disciplinary knowledge, stimulate students' learning interest and scientific exploration spirit; guide students to establish correct concepts of healthy living and scientific training
Ability	Cultivate critical thinking, problem-solving abilities, experimental operational skills, and research literacy; be able to apply acquired knowledge to analyze problems in sports practice and transform theoretical knowledge into practical skills	Through case analysis and experimental teaching, cultivate students' scientific literacy and practical abilities; emphasize teamwork and autonomous learning capabilities, enhancing social responsibility
Values	Promote sportsmanship and advocate healthy lifestyles; establish correct worldviews, outlooks on life, and values; cultivate patriotism, social responsibility, and humanistic care spirit	Through stories of sports figures and inspirational cases, cultivate students' spirit of self-improvement and awareness of equal participation; guide students to pay attention to social issues and actively participate in the construction of social civilization

Table2 Bloom-Based civic education in exercise physiology

Affective Level	Civic Education Objectives	Methods	Expected Outcomes
Receiving	Perceptual Enlightenment	Context creation and intuitive demonstration; employing multimedia assistance and case introduction in teaching	Stimulate learning interest; understand disciplinary frontiers and practical issues
Responding	Emotional Resonance	Interactive discussion and emotional guidance; conducting teaching through group discussions and role-playing	Enhance emotional experiences; improve teamwork and autonomous learning capabilities
Valuing	Value Discrimination	Critical thinking training; conducting teaching through case analysis and problem exploration	Form personal value judgments; enhance moral reasoning abilities
Organizing	Value Systematization	Systematic organization; teaching through mind mapping construction and group collaboration	Build internally consistent value systems; enhance stability
Characterizing	Characteristic Internalization	Self-reflection and personalized guidance; teaching through one-on-one communication and assessment	Achieve personalized development of value systems; form distinctive qualities

Table3 Civic education design in exercise physiology

Instructional Module	Knowledge Points	Ideological and Political Materials	Implementation Strategies
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National Sentiment and Collective Honor	Overview of Exercise Physiology	National Pride & Collective Honor Exercise Physiology Overview Qian Xuesen; Prof. Wang Yirun	Case-based teaching, discussion-based teaching
Self-Improvement and Equal Participation	Muscle Contraction Principles	Zhang Haidi's and disabled athletes' stories of struggle; inspirational stories of Quan Hong Chan and Li Ning	Context creation, case analysis
Healthy Living and Scientific Literacy	Energy Metabolism, Immunity and Exercise	Yuan Longping's scientific research spirit; marathon athletes' training stories	Case-based teaching, context creation
Psychological Quality and Personal Growth	Motor Skill Formation, Changes in Bodily Functions	Zhang Yufei's perseverance; Liu Xiang's technical breakthroughs	Discussion-based teaching, case analysis
Moral Norms and Scientific Exploration	Endocrine Regulation, Respiration and Exercise	Tu Youyou's discovery of artemisinin; Zhong Nanshan's fight against COVID-19	Project-driven teaching, case-based teaching
Social Responsibility and Ecological Civilization	Environment and Exercise, Obesity and Weight Control	Yang Shanzhou's tree planting; data from China's Health White Paper	Contextual teaching, case analysis

6. Civic education effectiveness in exercise physiology

Since the implementation of curriculum-based ideological and political education, this study has constructed a diversified student-centered evaluation system. Through questionnaire surveys of students majoring in Social Sports from the 2021 and 2023 cohorts, as shown in Table 4, in the dimension of knowledge and skills, positive feedback from the 2023 cohort increased by 22.22% compared to the 2021 cohort, demonstrating that curriculum-based ideological and political education effectively strengthened students' understanding of disciplinary frontier knowledge and their ability to solve practical problems. In the dimension of emotional attitudes and values, positive feedback increased by 9.68%, indicating that curriculum-based ideological and political education achieved success in cultivating students' awareness of scientific training and core sports competencies. In the comprehensive dimension, students' negative feedback regarding in-depth study of related disciplinary theories decreased, with teaching satisfaction rising from 45.95% to 56.76%, and instructor satisfaction increasing from 27.03% to 48.65%. This fully illustrates that curriculum-based ideological and political education promoted the deep integration of teaching and educating, earning widespread acclaim from both students and instructors. Thus, through diversified evaluation systems and innovative ideological and political activities, curriculum-based ideological and political education has achieved remarkable results in enhancing students' multi-dimensional feedback across knowledge and skills, process and methods, and emotional attitudes and values, providing strong empirical evidence for the effective implementation of curriculum-based ideological and political education in higher education.

Table4 Civic education effectiveness in exercise physiology

Dimension of Assessment	Survey Content	Achievement Rate of Grade 2021 (%)	Achievement Rate of Grade 2023 (%)	Increase Rate (%)
Knowledge & Skills	Awareness of cutting-edge developments in Exercise Physiology; Ability to solve practical problems.	48.65	59.46	22.22
Process & Methods	Mastery of learning strategies and professional literature review; Improvement of teamwork and	32.43	21.62	-33.33

	communication skills.			
Affective Attitudes & Values	Promoting the development of scientific training and competition; Enhancing core sports literacy and in-depth learning of related disciplines.	83.78 21.62	91.90 37.84	9.68 75.00
Comprehensive Evaluation	Overall teaching satisfaction.	45.95	56.76	23.53
	Satisfaction with the instructor.	27.03	48.65	80.00

7. Conclusion

This study takes the Exercise Physiology course as a vehicle and, based on Bloom's affective domain taxonomy of educational objectives, constructs a five-layer progressive model of curriculum-based ideological and political education. Through diverse teaching strategies such as context creation and interactive discussion, the organic integration of knowledge transmission and value guidance has been achieved. The results indicate that curriculum-based ideological and political education significantly enhanced students' multi-dimensional feedback across knowledge and skills, emotional attitudes and values, promoted the deep integration of teaching and educating, and received widespread recognition from both students and instructors. Nevertheless, this study still has certain limitations, such as limited sample size and concentration primarily in specific major classes. Future research may further expand the sample scope, explore the applicability of this model in other sports disciplines, and combine more diversified teaching methods and assessment approaches to further optimize the implementation effectiveness of curriculum-based ideological and political education.

8. References

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