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Research on Three-All Education of Students in Navigation Technology Major in Higher Vocational Education

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Abstract:

Course-based ideological education and the "Three-All" holistic education model serve as two strategic pillars for vocational education to fulfill its fundamental mission of cultivating virtue and talent in the new era. This paper analyzes the educational characteristics of maritime technology programs in vocational colleges and systematically elucidates the intrinsic connections between course-based ideological education and the "Three-All" approach. It analyzes current challenges in value guidance, collaborative education among stakeholders, process integration, and interdisciplinary synergy within maritime programs. The study proposes implementation pathways including: establishing a "Red-Blue Synergy" value framework, enhancing multi-stakeholder collaborative mechanisms, creating a comprehensive education chain integrating maritime, aviation, and space (termed as "Three-Airship Integration"), and fostering a "Virtual-Physical Integration" holistic educational ecosystem. Support mechanisms are explored through four dimensions: organizational leadership, faculty development, evaluation reform, and cultural immersion. The study seeks to establish theoretical underpinnings and practical guidelines for cultivating maritime professionals who embody both moral integrity and technical proficiency in the new era.

Keywords:

Ideological and Political Education in Curriculum, Three-Aspect Education, Navigation Technology Major, Higher Vocational Education, Navigation Spirit

1. Introduction

The maritime technology discipline shoulders the mission of cultivating high-caliber technical professionals to advance maritime and shipping power. As the smart ship technology industry rapidly evolves and the shipping sector undergoes significant changes, maritime professionals are required to master advanced technical skills and embody steadfast ideals, profound patriotism, a strong sense of responsibility, and noble professional ethics. Integrating value cultivation, knowledge transmission, and

competency development has become the central challenge in reforming maritime vocational education [1].

As innovative achievements in the educational philosophy of higher education in the new era, curriculum-based ideological and political education and the "Three-Alls" holistic education [2] provide theoretical guidance and practical pathways to address this challenge. Curriculum-based ideological and political education emphasizes integrating value guidance into various course teachings, achieving an organic unity of knowledge transmission and value leadership. The "Three-Alls" holistic education constructs a systematic educational framework from three dimensions: subject, time, and space. The deep integration of these two approaches can effectively address the unique challenges of talent cultivation in maritime technology: the arduous and risky nature of maritime professions necessitates practitioners having firm willpower, while the international and strategic nature of maritime activities requires profound patriotism sentiments, and the comprehensive and cutting-edge nature of maritime technology necessitates a continuous spirit of innovation [3].

Based on the practice of education in higher vocational navigation technology, this paper systematically discusses the theoretical connotation, practical difficulties and practical path of the integration of curriculum ideological and political education and the three full education, in order to provide reference for the deepening of education reform in higher vocational navigation colleges.

2. Theoretical Connotation and Logical Connection of Ideological and Political Education in Courses and the Three-All Education

2.1. The Essential Meaning of Ideological and Political Education in Courses

Course-based ideological and political education does not entail adding a new course or activity; rather, it represents an educational philosophy and practice system that organically incorporates ideological and political education throughout the entire teaching process of various courses courses. Its core significance lies in revealing the ideological and political elements and educational values embedded within each course, ensuring alignment of all courses with ideological and political courses, thereby generating synergistic effects. For the maritime technology major, course-based ideological and political education involves organically integrating value elements such as the maritime power strategy, the inheritance of maritime spirit, and safety responsibility incorporating awareness and cultivation of the craftsman spirit into specialized courses such as navigation science, ship handling, maritime meteorology, and ship management, thereby achieving a profound integration of knowledge transmission and value guidance.

2.2. The Systematic Logic of Three-All Education

The "Three-Alls Education" framework underscores three pivotal dimensions: multi-stakeholder collaboration in educational leadership, seamless vertical integration of the educational process, and cross-domain coordination of learning environments. The "All-Stakeholder Education" principle requires active participation from schools, enterprises, families, and society in the educational process. The "Full-Cycle Education" approach ensures comprehensive support throughout students' entire academic journey from enrollment to graduation. The "All-Dimensional

Education" model achieves seamless integration between classroom and extracurricular activities, on-campus and off-campus experiences, as well as online and offline learning platforms [4]. This systematic educational paradigm aligns with the distinctive characteristics of maritime technology talent development: cultivating navigation skills requires long-term accumulation, nurturing maritime spirit demands multidimensional exposure, and developing maritime literacy necessitates collective participation.

2.3. The Intrinsic Logic of the Integration

Curriculum-based ideological education and the "Three-Alls" education model demonstrate intrinsic theoretical alignment and practical complementarity. In terms of objectives, both serve the fundamental mission of moral education, aiming to cultivate well-rounded individuals with comprehensive development in moral, intellectual, physical, aesthetic, and labor education. Regarding implementation approaches, curriculum-based ideological education provides the pedagogical framework and instructional tools for the "Three-Alls" model, while the latter expands its scope by broadening the participants, extending the timeline, and expanding the geographical reach. Considering the unique demands of maritime talent development, their integration effectively addresses three core needs: (1) integrating the cultivation of maritime spirit throughout professional education; (2) coordinating educational resources from schools, enterprises, and industries; (3) ensuring seamless integration of classroom learning, practical training, and workplace experience.

The "4+10" holistic education system with distinctive maritime features, developed by Jimei University's College of Navigation, exemplifies this integration philosophy. Guided by the Jia Geng Spirit, the system embeds ideological education into ten key educational dimensions -- professional instruction, practical training, and cultural activities -- effectively harmonizing value cultivation with competency development.

3. Review of the Current Situation of Three-All Education in Higher Vocational Navigation Technology Specialty

3.1. Practical Exploration and Outcomes

In recent years, maritime vocational colleges have actively explored the integration of ideological and political education with the "Three-All" education approach. Jiangsu Maritime Vocational and Technical College has established a "Pilot Education" ideological education practice system [1], implemented semi-military management, and set up the "Pilot Forum" to invite renowned captains for interactive exchanges with students, integrating the cultivation of maritime spirit into daily management and campus culture. Jiangsu Shipping Vocational and Technical College has developed a "Dual-Source, Three-Air" curriculum-based ideological and political education co-cultivation model, leveraging the polar expedition navigation team to transform real-world scenarios from polar expeditions into educational resources, thereby constructing a three-stage progressive educational model of "Pilot-Initiate-Lead". The The college has also collaborated with the China Polar Research Center to establish a "School + Polar Center" dual-source collaborative community for ideological and political education [5], transforming vivid stories from major national projects into dynamic teaching materials for ideological and political education.

In innovating talent cultivation mechanisms, some institutions have pioneered

collaborative education models involving partnerships between schools and enterprises. Jiangsu Shipping Vocational and Technical The college has forged a partnership with COSCO Shipping Group to launch the "Two Stations and Two Rooms" initiative, which encompasses the Public Rest Crew Party Branch Workstation, Maritime Wives Support Station, Gold Medal Captain Studio, and Gold Medal Engineer Studio. This initiative promotes synergistic organizational development, nurtures talent, and fosters mutual growth between academia and industry. Through this profound collaboration, enterprises have evolved from mere employers to active participants in talent development, effectively expanding the scope of inclusive education [6].

3.2. Key Issues and Challenges

In accordance with the demands of integrating ideological and political education with curriculum standards and adhering to the "Three-All" education model, the current approach to talent cultivation in maritime technology programs continues to confront the following significant challenges:

There exists a disparity between value orientation and professional instruction. While most institutions prioritize ideological and political education in courses, some specialized programs still incorporate such elements in a superficial manner -- merely attaching superficial labels or making superficial additions -- without achieving organic integration with academic content. The development of school-based courses like maritime history and culture remains inadequate, and educational resources such as the spirit of Zheng He and maritime explorers' stories have yet to be fully transformed into effective teaching cases.

The collaborative The education mechanism involving multiple stakeholders is still underdeveloped. Enterprises should deepen and broaden their engagement in talent cultivation, as some school-enterprise collaborations currently focus solely on superficial aspects, such as internship placements and job recommendations. Furthermore, the involvement of corporate technical experts in curriculum design, classroom teaching, and academic assessment remains constrained. The roles of key stakeholders such as parents and alumni resources have not been fully tapped, and a comprehensive education framework that involves all stakeholders and promotes collaborative endeavors has yet to be established.

There are gaps in the holistic education chain. The educational work lacks sufficient continuity across different academic stages, and the educational functions of enrollment adaptation, specialized learning, on-the-job internships, and career guidance have not been effectively integrated. Particularly during the shipboard internship period, the school's ideological guidance and psychological support for students appear somewhat inadequate, leaving a noticeable void in the educational landscape during the "floating on the sea" phase.

The integration across comprehensive educational domains remains somewhat lacking. The coordination among the primary channel of classroom instruction, practical platforms, online and offline spaces, as well as on-campus and off-campus resources, lacks sufficient fluidity. The application of new technological means, such as virtual simulation and smart teaching, in education require further deepening, and the educational functions of maritime culture have not been fully explored [7].

4. Path Construction of Three-All Education in Maritime Technology Specialty under the Background of Ideological and Political Education in Courses

4.1. Building a "Red and Blue" Value Guidance System

Based on the professional characteristics of maritime technology, we have established a value-guiding system with red genes and blue sentiments as its core. On one hand, we have deeply explored red resources, systematically organizing maritime elements from the history of the Communist Party, the history of New China, the history of reform and opening up, and the history of socialist development, and developed school-based courses such as "Maritime Silk Road" and "China Maritime History" to cultivate students' patriotism and national sentiment through the spirit of Zheng He's voyages and the strategy of building a maritime power. On the other hand, we have deepened maritime awareness by integrating the spirit of navigation, craftsmanship, and science into professional course teaching, embedding stories of navigators, polar expedition cases, and major national engineering projects into courses such as ship handling, maritime meteorology, and cargo stowage, thus achieving an organic unity of technical instruction and spiritual inheritance.

In terms of implementation, the "One Lesson, One Strategy" The reform of ideological and political education in courses is being advanced. Professional teachers collaborate with industry experts and ideological and political educators to design curriculum-based teaching materials. By analyzing the unique characteristics of each specialized course, they identify ideological and political elements and design corresponding teaching cases, thereby establishing a teaching framework in which "every course incorporates ideological and political education, each with its own distinctive features." For instance, the teaching of ship navigation systems incorporates the story of Huang Xuhua, who anonymously developed nuclear submarines, while the course on marine equipment maintenance integrates the challenges faced by polar research teams.

4.2. Improving the Collaborative Education Mechanism of Multiple Stakeholders

We are expanding the boundaries of all-staff education by building a five-in-one educational community integrating schools, enterprises, families, alumni, and society [8]. Through platforms such as industry colleges and industry-education integration communities, we deepen school-enterprise collaboration by implementing a dual-mentor system: corporate mentors provide technical expertise and foster professional ethics, while school mentors enhance value guidance and monitor ideological trends. The practice of the Polar Expedition Navigation Team demonstrates that when corporate technical experts exhibit professional ethics through firsthand experience, the educational impact significantly transcends mere theoretical instruction.

We will activate alumni resources for student development by establishing a mentor database and inviting distinguished alumni to return to campus for themed lectures such as "Alumni Forum" and "My Alma Mater and Me," motivating current students with their compelling growth narratives. To strengthen school-family collaboration, we will establish a parent communication platform to consistently keep families informed of students' progress, encouraging parents to participate in career planning and provide ideological guidance. Additionally, we will expand social education resources by utilizing events such as Maritime Day and Seafarer's Day to organize

students in maritime science outreach and marine conservation activities, thereby deepening their value recognition through real-world experiences.

4.3. Building a Holistic Education Framework for the Three Aviation Sectors

Drawing on the practical experience of Jiangsu Shipping Vocational and Technical At the college level, we have established a three-stage progressive education chain [9]: "Pilotage -- Launch -- Navigation." The Pilotage phase, spanning from enrollment to foundational studies, employs "national treasures" as guides. Through organized visits to teaching vessels, navigation simulators, and shipping companies, along with lectures by renowned captains, students gain understanding of maritime values and strengthen their professional aspirations. The Launch phase (core skill development) adopts "research mentorship," where outstanding teachers engage in polar expeditions and ocean voyages, converting real-world engineering challenges into teaching cases. This "real-world problem-solving" methodology sharpens students' professional skills and fosters their professional ethos. The Navigation phase (internship and career preparation) employs "exemplary role models," pairing outstanding graduates and industry labor models with students. These role models inspire personal growth and strengthen commitment to building a maritime powerhouse.

To ensure effective implementation, we establish a comprehensive educational record system to document students' intellectual development throughout their academic journey, offering tailored guidance for each developmental phase. To address educational gaps during onboard internships, we implement a dual-track mentoring model that combines "shore-based mentors" and "shipboard mentors." Through digital platforms, we maintain continuous communication with interns to guarantee uninterrupted educational support.

4.4. Creating a Holistic Educational Ecosystem Integrating Virtual and Real Elements

Integrate in-class and out-of-class, on-campus and off-campus, online and offline educational fields to build a comprehensive educational ecosystem [10]. Deepen the construction of the main classroom channel, promote the coordinated efforts of "ideological and political courses + course-based ideological and political education," and integrate value provide guidance throughout the entire professional teaching process. Strengthen practical education platforms by leveraging teaching internships, maritime simulation centers, and virtual simulation training bases to establish "marine ideological and political classrooms" allowing students to experience responsibility and commitment through simulated navigation, fault troubleshooting, and emergency drills. China Ocean University's "Marine Scientific Research Cognitive Practice" course, conducted on the research vessel "Dongfanghong 3," extends the ideological and political classroom to the vast expanse of the sea, empowering students to fortify their ideals and convictions amidst the waves. This model serves as an exemplary paradigm worthy of emulation by maritime vocational colleges.

We are broadening the horizons of online learning spaces through the strategic utilization of smart education platforms, such as the "Mariner E-Home" integrated learning hub, which facilitates the delivery of top-tier educational resources and seamlessly integrates cloud-based instruction with hands-on ship handling experiences. Leveraging learning analytics, we actively track and analyze student engagement data to offer tailored, data-informed guidance that enhances the educational experience. To foster a maritime cultural ecosystem, we have established

key cultural landmarks, including a maritime exhibition hall, intangible cultural heritage training bases, and alumni cultural walls. Signature events such as the Maritime Arts Festival and maritime skills competitions further integrate maritime culture into students' daily lives.

5. Safeguard Mechanism

5.1. Strengthening Organizational Leadership

Establish and enhance the talent cultivation mechanism under the unified leadership of the Party committee, with joint management by the Party and government, and coordinated collaboration among departments. Establish a Leading Group for Ideological and Political Education in Courses and the "Three-All" Talent Cultivation Program to coordinate the design of the talent cultivation system, resource integration, supervision, and evaluation. Secondary colleges shall carry out the primary responsibility for talent cultivation, incorporate talent cultivation into development plans and annual assessments, and ensure the effective implementation of all tasks.

5.2. Building an Excellent Faculty Team

Teachers are the cornerstone of education. We must strengthen their ideological and political education and professional ethics development to guide them in fulfilling their educational mission. The Teacher Education Capacity Enhancement Program will be implemented, featuring specialized We will conduct training on curriculum-based ideological education, teaching competitions, and research projects. This aims to improve teachers' ability to identify ideological elements and design educational modules. The counselor team will be reinforced by adhering to the principle of "where students are, work follows," leveraging their unique roles in ideological guidance, psychological counseling, and career counseling. Additionally, we will recruit corporate technical experts and outstanding alumni as part-time mentors to strengthen our educational workforce.

5.3. Deepening Evaluation Reform

Develop a multidimensional evaluation framework focused on educational outcomes. Integrate the effectiveness of ideological and political education in courses into professional, curriculum, and faculty evaluation systems, guiding teachers to consciously incorporate value-based guidance into their teaching practices. Establish a comprehensive student evaluation system that includes moral character, professional ethics, and innovative thinking, addressing the inclination to overly prioritize technical skills at the expense of holistic development. Implement third-party evaluations by conducting regular graduate follow-up surveys and employer satisfaction assessments, using the results to inform continuous improvements in educational practices.

5.4. Creating a Cultural Atmosphere

Cultural education serves as a nuanced yet impactful means of nurturing. By tapping into the educational potential of maritime heritage, we integrate the spirit of patriotism, progress, dedication, and service into campus landscapes, institutional frameworks, and signature programs. We establish a distinctive 'One Institute, One Brand' cultural identity, develop maritime heritage preservation centers, and conduct thematic education on the 'Maritime Spirit.' This approach fosters a campus culture

that deeply values labor and craftsmanship, allowing students to immerse themselves in a professional ethos that is both culturally enriching and practically oriented.

6. Conclusions

The deep integration of ideological education in curricula with holistic education (all-staff, all-process, all-round) is an essential requirement for maritime vocational education to fulfill its fundamental mission of cultivating virtue and talent in the new era. In response to the call for building a maritime and shipping powerhouse, the cultivation of maritime technical professionals must unify value guidance with skill development, establishing an educational framework featuring full-staff participation, continuous integration, and comprehensive collaboration. The proposed approaches -- 'Red-Blue Synergy' value guidance, 'Three Navigation Integration' process-oriented education, and 'Virtual-Physical Integration' field coordination -- aim to provide references for deepening educational reforms in maritime vocational institutions. Future research could further explore new connotations of maritime spirit in the intelligent navigation era, applications of artificial intelligence in precision education, and long-term mechanisms for school-enterprise collaborative education, thereby continuously empowering educational practices through theoretical innovation.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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