

Construction and Practice of the “Four-Dimensional Education” Model for Ideological and Political Courses Based on the Vocational Undergraduate Nursing Major

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Abstract: Against the dual backdrop of the implementation of the “Artificial Intelligence + Education” strategy and the international upgrading of the health and wellness medical industry in Hainan Free Trade Port, this study addresses the talent cultivation requirements of international nursing programs, which emphasize the integration of professional ethics and skills alongside humanistic empowerment. Taking the 2025grade international nursing undergraduate class of a vocational university as an empirical sample, and grounded in the local red resources of Qiongya and the characteristics of the nursing profession, this paper innovatively constructs a “four-dimensional education” model characterized by “Red Spirit Guidance, Digital-Intelligent Empowerment, Co-Cultivation of Morality and Skills, and Integration of Knowledge and Action.” Relying on the Changjiang Rain Classroom smart teaching platform, and through multidimensional reforms including red aesthetic education immersion, digital quantitative management, integration of professional and ideological education, and tiered practical research studies, the classroom ecology of ideological and political courses has been reshaped. Empirical data from two semesters demonstrate that this model significantly improves students’ classroom participation, knowledge internalization efficiency, and professional humanistic literacy, effectively resolving the disconnection between ideological teaching and professional training. This also establishes a replicable and scalable paradigm for ideological and political education in vocational undergraduate programs, providing practical references for the high-quality cultivation of international nursing talents in the Free Trade Port.

Keywords: Digital-intelligent empowerment; Four-dimensional education model; Vocational undergraduate; International nursing; Ideological and political course reform

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1. Introduction

1.1. Policy background and context

In 2025, the State Council issued the *Opinions on Deeply Implementing the “Artificial Intelligence +”*

Action, explicitly promoting the full integration of artificial intelligence and digital technologies into the entire teaching and learning process, reconstructing classroom teaching models, and innovating educational evaluation systems ^[1]. It encourages universities to leverage AI tools to create precise, personalized, and immersive smart classrooms, providing top-level policy support for the digital transformation, quality improvement, and efficiency enhancement of ideological and political courses in higher education in the new era. Vocational undergraduate education, with its core educational orientation of “integrating ethics and skills, combining work and study,” differs from ordinary undergraduate education by placing greater emphasis on the coordinated cultivation of professional quality, practical ability, and humanistic ethics ^[2]. This requires ideological and political education to break through the limitations of purely theoretical instruction and deeply align with industry standards and industrial development needs.

As Hainan Free Trade Port continues to deepen its opening up, high-end wellness, international medical care, and foreign-related nursing industries are rapidly aggregating, which in turn raises the standards for regional nursing talent cultivation. International medical institutions not only require nursing talents to possess solid clinical practical skills but also value their sense of patriotism, humanistic literacy, professional responsibility, and craftsmanship spirit, presenting new challenges to the precision, professionalism, and practicality of ideological and political education in private vocational undergraduate nursing programs. Meanwhile, the university has fully implemented the Rain Classroom digital teaching reform and established a whole-process classroom data management and control mechanism, providing a solid institutional and platform guarantee for this study to carry out digital-intelligent ideological education reform and implement the four-dimensional education model.

1.2. Realistic dilemmas and problem formulation

Students in private vocational undergraduate institutions come from diverse academic backgrounds, and many exhibit a cognitive bias of “emphasizing professional skills over ideological literacy, and valuing practical training over theoretical accumulation.” This, combined with the rigid one-way indoctrination model of traditional ideological and political classrooms, results in four major educational shortcomings. First, the classroom ecology is passive and ossified: students have high rates of head-down behavior, weak willingness to actively think and express themselves, and widespread silent classrooms and passive listening ^[3]. Second, ideological education is deeply disconnected from professional training: the textbook content is abstract and macro-level, divorced from students’ lives, careers, and regional development, resulting in a low sense of gain and a misconception that “ideological education is useless and irrelevant to the profession,” forming a typical “two separate skins” problem ^[4]. Third, classroom evaluation is crude and vague, relying on subjective instructor scoring without refined, process-oriented, intelligent, and quantitative assessment. Fourth, practical education is fragmented and superficial; practical activities often involve only a few students and fail to provide universal training. Addressing these pain points, this paper innovates the “four-dimensional education” model, leveraging in-depth digital-intelligent teaching reform to solve the challenges of ideological education in vocational undergraduate settings.

2. Core connotations and theoretical construction of the “four-dimensional education” model

Grounded in the industrial demands of the Free Trade Port, the educational principles of vocational undergraduate programs, the characteristics of the nursing profession, and the development trends of

digitalintelligent education, this model breaks through the traditional fragmented and compartmentalized approach to ideological education. It innovatively constructs a fourdimensional educational paradigm: “Red Spirit Guidance, DigitalIntelligent Empowerment, CoCultivation of Morality and Skills, and Integration of Knowledge and Action.” These four dimensions are progressive and mutually reinforcing, respectively corresponding to value guidance, technical support, educational objectives, and practical pathways, forming a comprehensive, threedimensional, and closedloop ideological education system. Theoretically, this addresses the issues of inefficiency, disconnection, and superficiality in vocational undergraduate ideological education.

2.1. Red spirit guidance: Building a solid educational foundation with local red resources

Red Spirit Guidance is the value core of the fourdimensional model, relying on the distinctive red cultural resources of the Qiongya Revolution in Hainan to reconstruct the value core of ideological classrooms. The red spirit of the Qiongya Revolution—characterized by unwavering commitment to original aspirations, perseverance, and selfless dedication—is highly consistent with the nursing profession’s spirit of healing the sick, saving lives, and selfless devotion^[5]. Through teaching formats such as onsite study tours to red venues, classroom sharing of red stories, and immersive red situational interactions, the revolutionary spirit of Feng Baiju and the steadfast spirit of the Qiongya Column are transformed into educational resources, cultivating students’ patriotism, sense of responsibility, and professional mission, thereby solving the problems of diluted value guidance and empty content in ideological courses, and laying an ideological foundation for the cocultivation of ethics and skills.

2.2. Digitalintelligent empowerment: Reshaping the ecology of ideological classrooms with digital technology

Digitalintelligent empowerment is the core innovative highlight and technical support of the fourdimensional model. It moves beyond the superficial drawbacks of current digitalintelligent ideological education in universities, which often “emphasize form over substance and checkin over education.” Instead, it deeply explores the educational core of the Rain Classroom smart platform combined with an AI intelligent learning companion, constructing a sixinone deep digitalintelligent classroom ecology: “empathetic education through emotional engagement, autonomous knowledge expansion education, critical inquiry education, intelligent assistance for teaching, precise quantitative evaluation, and dynamic optimization management.” Through refined, scenariobased, and taskbased interactive digital design, technology genuinely serves students’ emotional resonance, knowledge internalization, and cognitive enhancement, as well as teachers’ teaching quality improvement. At the same time, it identifies existing platform limitations and optimization pathways through practical teaching, forming a closedloop digitalintelligent teaching reform system of “applicationrefl ectioniteration,” which is highly practical and innovative.

1. Classroom BulletScreen Comments. Immersive empathetic education, achieving “evoking emotions through context and enlightening through feeling.” The bulletscreen function is transformed from an entertainmentoriented interactive tool into a dedicated carrier for cultivating red ideological and emotional sentiments, precisely addressing the issues of “rigid theory, emotional distance, and empty values” in traditional ideological courses. When playing red documentary videos—such as those on the Korean War, the Qiongya Revolutionary struggle, or battlefield medical rescue—realtime bulletscreen interaction is enabled, guiding students to spontaneously express their genuine feelings and reflect on their insights based on the

audiovisual scenes. Students post heartfelt comments like “The revolutionary martyrs fought so that future generations would not have wars,” “They went to their deaths bravely for our happy life today,” and “If they hadn’t gone to the battlefield, we would have to fight today.” This enables simultaneous collective empathy and immersive reflection. Compared to traditional oneway lectures, realtime bulletscreen interaction makes abstract revolutionary spirit and patriotism tangible, allowing red education to take root and subtly cultivate students’ patriotic foundation and their initial dedication to the nursing profession.

2. Online Submission. Expanding knowledge boundaries, activating textbook theories, and enhancing students’ sense of learning gain. Textbooks for ideological courses are macrolevel and theoretical in nature; relying solely on them tends to lead to shallow understanding, disconnection between learning and application, and a low sense of achievement. To address this, a submission mechanism is constructed: “teacherguided precision → students’ independent research → connection to multidimensional contexts → collective sharing and progress.” Teachers guide students to go beyond the textbook, independently search for historical backgrounds, anecdotes, and origins related to each lesson’s core knowledge points, and specifically connect them to four dimensions: personal growth, nursing professional characteristics, development in Hainan or their hometowns, and medical construction in the Free Trade Port. Students compile and upload their findings to the Rain Classroom submission area for sharing and discussion. For instance, when covering the core point that “democratic parties abandoned the middle road, broke with the Kuomintang reactionaries, and firmly followed the Chinese Communist Party,” teachers guide students to collect and share the historical story of “He Xiangning’s letter and skirt to rebuke Chiang Kaishek.” Through independent historical research, reading, and writing, students vividly grasp the Kuomintang’s dictatorial and treacherous nature and deeply understand the inevitability of the democratic parties’ historic choice, transforming dull modern history into vivid historical facts, effectively broadening students’ knowledge horizons, grounding abstract theories, and greatly enhancing their independent inquiry skills and classroom learning satisfaction.

3. Classroom Discussion. Activating active critical thinking and cultivating deep thinking abilities. An open discussion forum is built on the Rain Classroom platform, with inquirybased topics focused on key and difficult textbook content, highquality materials from the submission area, and current social issues. Students are encouraged to express their views, exchange ideas, and engage in intellectual collisions. Unlike passive questionandanswer sessions, regular classroom discussions are designed to compel students to actively study materials, think independently, and articulate their opinions, fundamentally reversing the habits of passive listening, reluctance to think, and inability to critically reason. This continuously cultivates students’ critical thinking and independent inquiry capabilities, upgrading their learning from “acquiring knowledge” to “learning how to learn, think, and reason.”

4. Group Debate Seminars. Multidimensional deconstruction of difficult and ambiguous concepts. For key and difficult content that requires multiperspective analysis, is conceptually unclear, or has room for debate, a “group collaboration + simulated debate” interactive model is adopted, with fixed 4–6 person study groups. For example, when teaching the ideological contestation between old and new thinking during the 1911 Revolution, a debate topic such as “The ideological merits and historical value of conservatives vs. reformers” is set, with groups taking different positions, gathering evidence, debating, and summarizing. Through immersive debate inquiry, students deconstruct historically contested issues from multiple angles, clarify the limitations and progressive significance of old and new ideas, break through the cognitive barriers

of oneway theoretical instruction, and achieve a deep, threedimensional, and thorough understanding of key difficulties.

5. AI Intelligent Workbench Empowers Teaching Comprehensively. The platform features an intelligent teaching assistant, forming a dualteacher classroom with the instructor, enriching teaching formats and enhancing classroom vitality. The accompanying intelligent learning companion provides 24/7 online Q&A services, answering students' questions both during and after class. Additionally, the platform supports oneclick test generation, AI automatic grading, and homework assessment. Preclass, the system can assign preparatory exercises based on the syllabus; during class, it responds to student queries in real time; after class, it quickly completes grading, error summarization, and generates professional learning analytics reports. These intelligent applications handle repetitive tasks such as test creation, grading, and data statistics, freeing instructors from mundane administrative work so they can focus on core aspects like teaching design, content refinement, integration of ideological elements, and personalized student development, thereby improving teaching quality and efficiency.

2.3. Cocultivation of morality and skills: Anchoring ideological education objectives through industryeducation integration

Cocultivation of morality and skills is the core objective of the fourdimensional model, closely aligning with the vocational undergraduate principle of “integrating ethics and skills” and the international nursing talent standards of the Free Trade Port. It promotes deep integration of ideological and moral education with professional skills and humanistic literacy. Rooted in the Nightingale nursing humanistic core and combined with the international health industry development needs of the Boao Lecheng International Medical Pilot Zone, professional qualities such as medical benevolence, rigorous attention to detail, dedication, and pursuit of excellence are integrated throughout the ideological teaching process. Through career ideal advocacy, study of craftsmanship stories, workplace scenario simulations, and professionrelated critical thinking, the problem of the “two separate skins” between ideological and professional education is eliminated, cultivating internationally oriented nursing talents who possess both professional ethics and skills, suitable for the highend medical industry of the Free Trade Port.

2.4. Integration of knowledge and action: consolidating ideological education outcomes through tiered practice

Integration of knowledge and action is the implementation pathway of the fourdimensional model, constructing a tiered and progressive practical education system of “classroom inquiry–oncampus practical training–offcampus study tours–competition advancement.” It breaks the spatial limitations of ideological classrooms, combining theoretical learning, classroom thinking, handson practice, field study, and advanced competitions organically. Students are guided from passive listening to active inquiry, and from theoretical cognition to practical engagement. Through modular ideological practical training, red realscene study tours, volunteer service practices, and craftsmanship competition performances, the principle of “integrating learning, thinking, and application, and unifying knowledge, belief, and action” is realized, effectively consolidating students' ideological cognition, professional competence, and professional quality.

3. Practical reform paths of the “four-dimensional education” model

3.1. Red-soul guidance: Immersive red aesthetic education to cultivate patriotism and professional commitment

Relying on Hainan’s rich local red cultural resources, we have built an immersive red ideological and political teaching system to promote the deep integration of red genes with the professional spirit of nursing. Hainan’s red lineage has been continuous and unbroken: from the poignant sites of the Japanese invasion during the Anti-Japanese War, bearing witness to the tragic years when the Qiongya people rose up in resistance; to the Li and Miao compatriots who, after the initial setback of the Baisha Uprising, actively sought out and accepted the leadership of the Communist Party, jointly opening up the Wuzhishan Revolutionary Base; then to the Liberation War period, when the Qiongya Column cooperated fully with the People’s Liberation Army to break through the Kuomintang’s Bering Defense Line and achieve the complete liberation of Hainan; after the founding of the People’s Republic, Shiwu Village in Danzhou carried forward the spirit of hard struggle, setting a benchmark of “Dazhai in the north, Shiwu in the south”; today, Hainan, as the only provincial-level free trade port in China—especially the Boao Lecheng International Medical Tourism Pilot Zone—stands at the forefront of reform, continuing to write a new chapter of daring exploration and pioneering experimentation.

In the teaching of relevant topics in the Outline of Modern Chinese History, we connect this complete local revolutionary and developmental history, deeply excavate the revolutionary spirit of the Qiongya Column’s “twentythree years of holding the red flag high,” organize students to share local anti-Japanese war stories, and, in conjunction with historical facts of red medical care, compare the spirit of dedication in battlefield nursing during the revolutionary era with the professional mission of contemporary nursing workers. We conduct classroom discussions on topics such as New China’s construction and overseas medical aid, using history to illuminate the present, and guiding students to integrate patriotism into their personal professional endeavors.

We regularly organize students to visit red landmarks such as the former site of the peasant movement in Zhongkai Village, the former residence of Feng Baiju, and the former site of the Qiongya Column adaptation, for onsite study tours, allowing students to personally experience the perseverance and responsibility of revolutionary forebears. After the study tours, we use Rain Classroom to facilitate sharing of reflections and thematic tests to consolidate learning outcomes. At the same time, we incorporate immersive activities such as red song singing and red story speech contests, using the red spirit passed down through generations to nurture nursing students’ professional aspiration of healing the wounded and saving the dying with selfless dedication.

3.2. Digital intelligence empowerment: Building a fullchain smart education system of “intelligent assisted teaching + deep interaction + precise evaluation + iterative optimization”

Relying on the Rain Classroom smart platform and AI intelligent learning and teaching assistants, combined with the abovementioned multidimensional deep interaction model, we have constructed a standardized, refined, traceable, and iterable classroom quantitative assessment and management system, thoroughly addressing the problems of coarse evaluation, superficial education, and loose management in traditional ideological and political classrooms. A single 2-session class has a process performance score of 100 points, covering six deep interaction modules: bulletscreen comments, thematic submissions, inclass tests, classroom

discussions, group debates, and offline practical exhibitions. All interactive behaviors are subject to gradient and refined scoring standards, eliminating formalistic and ineffective participation. The system automatically records every student's bulletscreen comment, knowledge submission, opinion discussion, and debate speech data. The entire process is open, transparent, and traceable, completely eliminating subjective scoring bias by teachers and forming a classroom management mechanism that combines rigid constraints with flexible incentives, comprehensively activating the participation vitality of all students.

At the same time, in view of the superficial problems existing in the current digitalintelligent classroom operation, we have established a mechanism for optimizing platform shortcomings to achieve continuous iterative upgrading of digitalintelligent teaching. In the open interaction mode of Rain Classroom, some students engage in perfunctory and casual speech, such as meaningless bulletscreen comments, perfunctory submissions, and fragmented discussions, weakening the effectiveness of deep education. To overcome this drawback, we have adopted an innovative keyword-based intelligent constraint mechanism. Teachers, together with AI teaching and learning assistants, preset exclusive core keywords and compliant speech scopes based on the current textbook knowledge points, teaching priorities and difficulties, and classroom themes. The system automatically screens and intercepts meaningless, perfunctory, and offtopic content, mandatorily regulating the quality of student interaction, forcing students to think precisely and output effectively, thereby thoroughly eliminating superficial and perfunctory learning behaviors.

3.3. Knowledge and practice through diligent learning: Building a hierarchical and progressive practical education system

We have constructed a fourdimensional practical education closed loop of “basic practical training + onsite study tours + scenario simulation + competition elevation” to implement the educational concept of integrating knowledge and practice. At the foundational level, relying on oncampus ideological and political practical training modules (including the dedicated oncampus ideological and political training base—the National Political Hall), we achieve inclusive education for all students, consolidating their basic ideological and political cognition and professional norms. At the scenario level, we regularly carry out study tours to red bases and community health volunteer services, extending the field of ideological and political education and deepening students' practical cognition. At the simulation level, using AR/VR digital training equipment, students experience clinical nursing, hospice care, and battlefield rescue scenarios immersively, comprehending the mission and responsibility of medical professionals. At the advanced level, relying on the exclusive practical training competition of the Outline of Modern Chinese History course, we offer a 10session special practical training on “Telling the Stories of Local Hainan Craftsmen.” With all students in the teaching class delivering speeches as the core practical activity, and adhering to the principle of full participation and full training, we build an inclusive practical education platform.

In the Ideological, Moral and Legal Education course, we have set up a 10session, fivemodule standardized practical training, covering professional ideal microspeeches, public welfare volunteer services, oncampus visits to the National Political Hall, and sharing of traditional Chinese virtue stories, aligned with Nightingale's humanistic spirit, cultivating students' professional qualities of compassion, rigor, and responsibility. Combined with the development status of the Boao Lecheng International Medical Pilot Zone, we organize students to engage in thematic discussions on the competency requirements of the international health care industry for nursing talents, guiding students to establish correct career values in light of the construction of the free trade port and nursing

job demands, achieving deep integration of ideological and political education, professional literacy, and career development. Grounded in the humanistic characteristics of the international nursing profession and the industrial needs of the free trade port, we have built a professional ideological integrated education system, thoroughly resolving the problem of “two separate skins.”

In the Outline of Modern Chinese History course, the speech training on local Hainan craftsmen stories strictly adheres to the 10-session course practical training requirement. Unlike the formalistic drawback of traditional competitions where “a few participate and most watch,” this training covers all students in the teaching class, with everyone delivering a speech on stage, transforming the competition training into a compulsory practical component for all students. The entire practical training process is managed digitally through Rain Classroom, focusing on the professional qualities of Hainan craftsmen—dedication and excellence—and linking them with nursing professional humanistic literacy, clinical service standards, and the requirements for cultivating international nursing talents in the free trade port, achieving an organic unity of history, ideology, and profession, and effectively honing students’ abilities in script writing, logical thinking, language expression, PPT production, and professional cognition. For example, under the guidance of instructors, one group of students from Nursing Class 1 performed outstandingly in the teaching class. Their speech centered on the core theme of “Craftsmanship Empowers Nursing, Compassion Serves the Free Trade Port,” with clear purpose, high professional relevance, and contemporary significance, winning the third prize in the universitywide final competition. Through the practical model of full-participation training plus selective elevation for excellence, we have ensured both the inclusiveness and full coverage of practical education, while also achieving advanced development for outstanding students, effectively realizing the educational goal of integrating knowledge and practice, and perfecting the practical closed loop of the four-dimensional education model.

4. Empirical effects of teaching reform and data analysis

Leveraging the Rain Classroom digital-intelligent teaching platform for full-process quantitative learning behavior data, combined with teaching indicators from two ideological and political theory courses—Ideological and Moral Cultivation (hereafter “Ideological Cultivation”) and Outline of Modern Chinese History (hereafter “History Outline”)—offered in different semesters to Classes 1–3 (totaling over 170 students) of the 2025 cohort of the International Nursing (Undergraduate) program, this section quantitatively verifies the actual effectiveness of digital-intelligence-empowered ideological and political classroom reform from four dimensions: class attendance, classroom interaction, knowledge acquisition, and in-class thematic discussion.

4.1. Continuous optimization of class attendance order, with graded improvement in class attendance rates

Following the implementation of digital-intelligent check-in and routine quantitative assessment, issues such as lateness, absenteeism, and off-task behavior have been effectively managed. Attendance rates for each class across the two courses showed a clear upward gradient: for the Ideological Cultivation course, Class 1 reached 86%, Class 2 90%, and Class 3 96%; for the History Outline course, Class 1 reached 94%, Class 2 96%, and Class 3 98%. Comparing the same classes across courses, the History Outline course, which

incorporated local red-themed immersive instructional design, generated higher student willingness to attend. Comparing across courses, the benchmark class—Class 3 of Nursing 2025—achieved attendance rates exceeding 95% in both courses, with a peak of 98%. Under the routine operation of the digital-intelligent classroom, students' self-discipline in class has been continuously enhanced, and the fundamental classroom order has been comprehensively consolidated, laying a solid offline foundation for deeper interactive teaching.

4.2. Multi-level digital-intelligent interaction activates full participation, with layered increases in classroom engagement

Bullet comments, in-class submissions, realtime Q&A, and classroom thread discussions constitute a tiered interaction system that breaks the traditional oneway lecture mode and the passive silence of students. All interaction indicators rose progressively with the class learning atmosphere.

Overall total classroom interactions: For the Ideological Cultivation course, Class 1 recorded 14,373 persontimes, Class 2 18,630, and Class 3 23,185; for the History Outline course, Class 1 recorded 17,777, Class 2 20,336, and Class 3 32,401. The total interactions in Class 3 of Nursing 2025 far surpassed the others, and the total interactions in the History Outline course were approximately 1.8 times those of Class 1, indicating a significant gap in overall classroom engagement.

Highorder critical thinking submissions: For the Ideological Cultivation course, Class 1 had 946 submissions, Class 2 1,175, and Class 3 1,386; for the History Outline course, Class 1 had 1,214, Class 2 1,402, and Class 3 1,907. Submissions represent higherorder outputs such as opinion articulation and case study expansion. The History Outline course, which incorporated thematic tasks related to the Qiongya Revolution and medical redthemed content, generated stronger student motivation for independent extended writing, resulting in higher total submissions than the Ideological Cultivation course.

Affective bulletcomment interactions: For the Ideological Cultivation course, Class 1 recorded 9,160, Class 2 12,917, and Class 3 17,588; for the History Outline course, Class 1 recorded 12,772, Class 2 15,077, and Class 3 26,797. Lowthreshold bullet comments covered introverted students, enabling realtime expression of classroom reflections for all. In both courses, Class 3 produced nearly twice as many bullet comments as Class 1, fostering a strong atmosphere of classroom empathy.

The tiered interaction model accommodates students with different characteristics: bullet comments remove the psychological barrier to public speaking and ensure full participation, while submissions guide logical reasoning and deep critical thinking. This truly achieves fullcoverage, tiered, and highquality classroom participation.

4.3. Steady improvement in inclass quiz completion rates, with notable internalization of ideological and political theory

The average completion rate of inclass quiz questions on the platform was used to measure students' knowledge absorption in the classroom. Indicators for both courses showed a synchronized upward gradient: for the Ideological Cultivation course, Class 1 reached 84%, Class 2 91%, and Class 3 91%; for the History Outline course, Class 1 reached 82%, Class 2 86%, and Class 3 89%. The data show a positive correlation: the higher the total classroom interactions, the better the quiz completion and performance. Classes 2 and 3 demonstrated significantly superior knowledge mastery compared with Class 1.

Through the new teaching model integrating red case studies, nursing humanities integration, and contextualized interactions, students' understanding of modern historical contexts, ideological and political values, medical professional responsibility, and craftsmanship spirit has moved beyond rote memorization. This bridges theoretical learning with nursing career cognition, addressing the pain points of vague ideologicalpolitical conceptual understanding and the disconnection between learning and application. Simultaneously, it cultivates students' comprehensive abilities in historical material collection, logical expression, and independent inquiry.

4.4. Clear stratification in realtime thematic discussion engagement, enabling deep integration of theory and reality

All student thread posts on the platform were generated synchronously during class, representing students' realtime discussion viewpoints on social hot topics, industry realities, and nursingrelated issues linked to the course content. These posts directly reflect the depth of students' ability to connect theory with practice. The data show: for the Ideological Cultivation course, the number of thread posts was 315 in Class 1, 435 in Class 2, and 495 in Class 3; for the History Outline course, the numbers were 1,130 in Class 1, 1,297 in Class 2, and 1,537 in Class 3. The History Outline course, which incorporated topics such as modern national salvation history and the deeds of medical predecessors, generated significantly stronger student willingness to discuss. A clear gradient was observed across the three classes, with Class 3 being the most active in realtime opinion output. Students proactively integrated ideological theories and historical experiences with current social and nursing practice realities, effectively reversing the traditional classroom shortcomings of theoryreality disconnection and students' reluctance to engage in deep thinking. This has formed an inclass educational model of simultaneous critical thinking and theoryreality articulation.

5. Conclusion

Against the dual background of AIempowered educational transformation and the internationalization of Hainan Free Trade Port's healthcare industry, ideological and political education in private vocational undergraduate institutions urgently needs to break free from traditional unidirectional lecturing, disconnection from professional training, and superficial educational approaches. The construction of a fourdimensional educational model—"Red Spirit Leadership-DigitalIntelligent Empowerment-VirtueSkill CoCultivation-KnowledgeAction Integration"—leverages red culture to consolidate value foundations, digital intelligence to optimize classroom formats, industryeducation integration to clarify educational directions, and practical training to consolidate educational outcomes. This effectively addresses prominent problems such as insufficient effectiveness, disconnection from professional fields, and lack of practical implementation in vocational undergraduate ideological and political classrooms.

The key to successful implementation of the educational model lies in the capacity upgrading and conceptual innovation of the ideological and political teaching faculty. On the one hand, teachers need to transform their teaching mindset, establish a "studentcentered" educational philosophy, evaluate classroom quality based on student participation and learning outcomes, and take guiding students toward deep understanding as their core responsibility. On the other hand, teachers should delve deeply into their corresponding professional fields, design teaching content by integrating professional characteristics,

industry development, and humanistic foundations, and promote deep integration of ideological and political education with professional education. At the same time, teachers should actively adapt to the trend of digital intelligence, proactively learn and apply new technologies such as artificial intelligence, so that technology serves classroom quality improvement and educational efficiency enhancement, thereby truly realizing the fundamental task of “fostering virtue through education.”

Disclosure statement

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