

Research on the Teaching Quality Evaluation System and Improvement Path of Ideological and Political for Online and Offline Blended Learning in Universities

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Abstract: Modern information technology has emerged as a pivotal avenue for educational reform. Leveraging information technology to transform teaching methodologies, enhance the quality of education, and promote all-encompassing development represents a cornerstone of contemporary educational reform in China. As educational informatization rapidly progresses, higher education faces both new challenges and opportunities. Ideological and political education in higher education institutions, as a vital means of nurturing students' comprehensive qualities and ethical values, must adapt to the demands of the information age by continually innovating teaching models and assessment mechanisms. This research aims to delve deeply into the teaching models, assessment mechanisms, and enhancement pathways for ideological and political education (IPE) in higher education within the context of educational informatization. It seeks to offer valuable insights and recommendations for higher education reform and development. Finally, this study offers pathways for enhancing IPE in higher education and provides recommendations. In the backdrop of educational informatization, higher education institutions should strengthen the information technology training and professional development of educators, enhancing the fusion of their teaching capabilities and educational thinking. Simultaneously, institutions should establish a robust quality assurance system for IPE, monitor and assess the teaching process, and employ informatization tools to provide timely feedback and adjust teaching strategies. Furthermore, institutions should emphasize the cultivation of students' information literacy and innovative capabilities, nurturing their ability for independent learning and self-directed development.

Keywords: Educational Informatization, Blended Learning, Ideological and Political Education(IPE), Teaching Assessment, Teaching Models, Teaching Innovation

1. Introduction

With the development of digitization and informatization, educational informatization has emerged as a significant trend in education. Ideological and political education in higher education institutions is a crucial component of higher education and a key means to achieve the goals of nurturing well-rounded individuals. In the context of educational informatization, how to innovate the teaching models and assessment mechanisms for ideological and political education in higher education and enhance the overall quality of this education has become an important research question. At the national level, China has entered a new era of development, where the importance of education is increasingly prominent. Educational reform and innovation in the field of education have become hot topics of social concern. At the national level, there is a significant strategic deployment to deepen ideological and political education in the curriculum, emphasizing the need for ideological and political education in higher education to adapt to the demands of the times, be guided by national and societal needs, innovate educational and teaching models, and nurture builders and successors of socialism. At the university level, with the rapid development of information technology, the construction of educational informatization in higher education has gradually become a new focal point in the field of education. The development of educational informatization in higher education provides an expanded space for ideological and political education, enriches the learning experiences of students, and assists teachers in carrying out teaching work more effectively.

Regarding research on the assessment mechanisms for ideological and political education in higher education, this thesis proposes an assessment indicator system and tools based on educational

informatization. Educational informatization provides more data sources and technological means for assessment, such as online quizzes, learning analytics, and data mining. By considering assessment indicators across multiple dimensions, including course content, teaching processes, and student performance, and employing both qualitative and quantitative analysis methods, a more comprehensive and accurate assessment of the effectiveness and quality of ideological and political education in higher education can be achieved.

2. Construction of ideological and political teaching system for online and offline hybrid courses in colleges and universities under the background of educational informatization

2.1 Research on existing problems and causes of ideological and political construction of college courses under the background of educational informatization

In light of the educational informatization backdrop, the categorization and summation of issues and causes pertaining to the establishment of ideological and political education within the framework of university curriculum are essential tools for enhancing the efficiency and quality of such an endeavor. Scholars have conducted a refined investigation into the differentiated roles undertaken in the process of university ideological and political education. From a strategic perspective, researchers have proposed a reformative approach to construct a "curriculum ideology and politics" curriculum system, addressing the challenges encountered during implementation by defining the functional positioning of three types of courses: ideological and political theory, comprehensive qualities, and specialized courses [1].

Examining the issues surrounding the establishment of ideological and political education within university curriculum, scholars have delved into specific fields, such as finance and economics, where they highlight the challenges of integrating ideological and political education with the goals of specialized courses, curriculum design, teaching methods, and fostering innovative approaches [2]. Analyzing the perspective of geography programs at universities, researchers have identified the primary issues as lagging in areas such as national education, patriotism, dialectical materialism, sustainable development, building a shared human destiny, aesthetic values, rule of law education, and practical theoretical integration [3]. Moreover, scholars contend that the process of constructing ideological and political education within university curriculum suffers from issues related to a lack of conceptual awareness, insufficient educational and teaching capabilities, inadequate resource allocation, and limited interdisciplinary collaboration [4].

Regarding the root causes of issues in the construction of ideological and political education within university curriculum, researchers have attributed one factor to the decentralized distribution of educational resources within the broader landscape of ideological and political education in higher education institutions [5]. Furthermore, scholars and others have explored the fusion of "ideological and political education" with "curriculum ideological and political education" in English major programs, encompassing thought education methods, language proficiency enhancement, and cultivation of professional ethics [6].

2.2 Research on innovative models of ideological and political curriculum teaching under the background of educational informatization

In the context of educational informatization, an innovative approach to ideological and political education within the university curriculum is explored [7]. Drawing from fundamental theories related to curriculum ideological and political education, such as constructivism, behaviorism, cognitivism, and ubiquitous learning, this research endeavors to construct a concept model for university curriculum ideological and political education, comprising six elements: teaching resources, instructional environment, pedagogical design, learning attitudes, learning processes, and learning outcomes. Employing the principles of inclined plane dynamics, this study seeks to dissect the operational mechanisms underlying this model [8]. This research will investigate a university curriculum ideological and political education model designed for the digital age. Integrating core tenets of traditional ideological and political education with the advantages of digital technology, this model incorporates personalized instruction, interactive teaching, and diverse evaluation methods to enhance the effectiveness of ideological and political education for students.

Therefore, this thesis aims to explore the impact of digital empowerment and integration innovation on curriculum ideological and political education in higher education within the context of educational informatization. It delves deep into three key aspects: curriculum ideological and political education

models, assessment mechanisms, and enhancement pathways. The research aims to uncover the application of digital technology in curriculum ideological and political education, establish a curriculum ideological and political education model suitable for the current digital era, and introduce new ideas and methods for evaluating curriculum ideological and political education in higher education. This research seeks to provide theoretical support and practical guidance for the development of curriculum ideological and political education in higher education, promoting its progress, and contributing to the cultivation of outstanding talents and national development.

3. Research on the evaluation mechanism of the current status of ideological and political teaching quality of hybrid courses in colleges and universities under the background of educational informatization

3.1 Establishment of structural equation model(SEM)

The structural equation model is a statistical method that analyzes the relationships between variables based on their covariance matrix. It is an important tool in multivariate data analysis. Structural equation analysis allows for the simultaneous consideration of multiple dependent variables, allows both independent and dependent variables to have measurement errors, and simultaneously estimates the factor structure and factor relationships [9]. It provides greater flexibility in modeling and evaluates the overall fit of the model. The structural equation describes the relationship between latent variables and observed variables, and its form is as follows:

$$\eta = B\eta + \Gamma\xi + \xi \quad (1)$$

The measurement equations represent the relationship between indicators and latent variables, and their forms are as follows:

$$X = \Lambda\xi + \delta \quad (2)$$

$$Y = \Lambda\eta + \varepsilon \quad (3)$$

3.2 Main theoretical assumptions and model construction

Based on the above assumptions, the initial model diagram of the structural equation model for the evaluation of ideological and political abilities of blended teaching courses in colleges and universities is shown in the figure1.

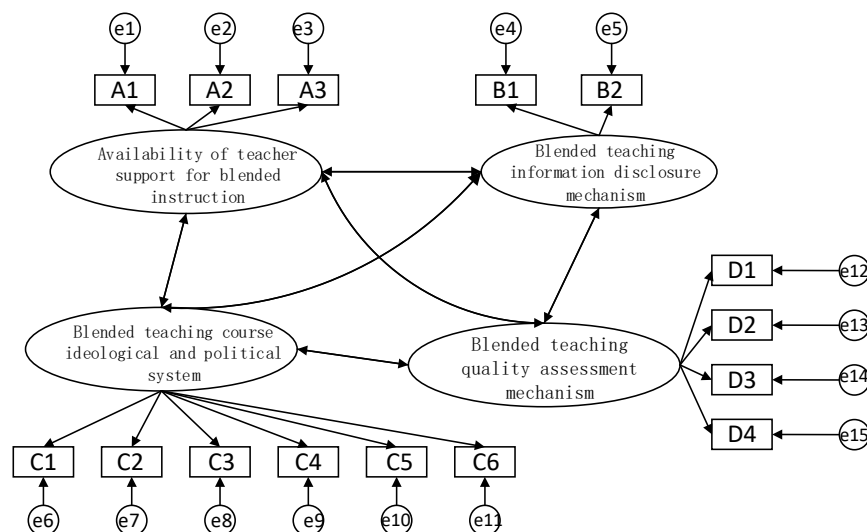


Figure 1. Evaluation model of ideological and political abilities in blended teaching courses

3.3 Survey Questionnaire Design

To gain a comprehensive understanding of the specific practices of "ideological and political education within the curriculum" in Shandong Province's universities, a survey questionnaire titled "Survey on the Practice of 'Ideological and Political Education within the Curriculum' in Shandong

Province's Universities" was developed[9]. A total of 300 questionnaires were distributed through both offline and online methods in the preliminary stage, with an effective response rate of 96.5%. The survey targeted university administrators, faculty members, and current university students. The questionnaire consisted of 28 questions divided into two main parts:

Part 1 (Questions 1-5): This section collected basic information about the respondents and consisted of single-choice questions.

Part 2 (Questions 6-28): This section focused on research related to ideological and political education within the university curriculum. It included rating items on the questionnaire, and the variables were measured using a Likert 7-point scale. The data collected from the questionnaire were analyzed using SPSS statistical software and factor analysis. Principal Component Analysis (PCA) was used to extract key influencing factors. After factor analysis, 65.58% of the overall factor information was revealed. Table 1 represents the distribution by gender, with 68% being male and 32% being female.

Table 1. Gender variable frequency table

| Options | Subtotal | Ratio |
|-----------------------------|----------|-------|
| Male | 85 | 68% |
| Female | 40 | 32% |
| The number of valid entries | 125 | |

Table 2 illustrates the distribution of survey respondents by grade level. The majority of respondents are third-year students, accounting for 76% of the total. First-year students make up 4%, second-year students account for 16%, and fourth-year students represent 4%.

Table 2. Frequency table of grade variables

| Options | Subtotal | Ratio |
|-----------------------------|----------|-------|
| Freshman year | 5 | 4% |
| Sophomore year | 20 | 16% |
| Junior year | 95 | 76% |
| Senior year | 5 | 4% |
| The number of valid entries | 125 | |

3.4 Test analysis based on structural equation model

3.4.1 Reliability test

For the returned questionnaires, the alpha coefficient is used to measure the credibility of the questionnaire. The test results are as shown in the table 3:

Table 3. Reliability Statistics

| Cronbach Alpha | Cronbach's Alpha based on standardized terms | Terms |
|----------------|--|-------|
| 0.892 | 0.894 | 15 |

Based on international and domestic research, the Cronbach's Alpha reliability assessment criteria are as follows: If the Cronbach's Alpha coefficient is above 0.8, it indicates high reliability. If it falls between 0.7 and 0.8, the reliability is considered good. If it ranges from 0.6 to 0.7, the reliability is acceptable. If it's below 0.6, the reliability is considered poor. The calculated Cronbach's Alpha coefficient for the observed variables is 0.835, which is higher than 0.8, indicating high data reliability.

3.4.2 Validity test

Questionnaire validity testing refers to the analysis of the validity of the questionnaire and the testing of the extent to which the results of the questionnaire reflect the objective reality it should reflect.

Table 4. KMO and Bartlett test

| | |
|-----------------------------------|------------------------|
| KMO sampling suitability quantity | 0.803 |
| Bartlett's test of sphericity | Approximate chi-square |
| | 1539.731 |
| | degrees of freedom |
| | 105 |
| | Significance |
| | 0.000 |

It can be seen from the survey research data that the significance value is 0.000, which is less than the significance level 0.05, as shown in the table 4. It passed Bartlett's sphericity test, and the KMO value is 0.803, which is higher than 0.6. Therefore, the results of this questionnaire survey are suitable for

factor analysis.

3.4.3 Analysis of model results

Table 5 has a total of 15 items of data, in which the variance of the item mean is 0.001, and the inter-item covariance is 0.007; the item mean is 2.015, the minimum value is 1.928, the maximum value is 2.080, and the inter-item covariance average is 0.093, and the minimum value is 0.001, and the maximum value is 0.452. Standardized parameter path diagram of the ideological and political ability evaluation model for hybrid teaching courses in colleges and universities is as shown in the figure2.

Table 5 Summary item statistics

| Summary item statistics | | | | | | | Number of Items |
|-------------------------|---------|---------|---------|-------|-----------------|----------|--------------------|
| Term average | Average | Minimum | Maximum | Range | Maximum/Minimum | Variance | |
| Interterm covariance | 2.015 | 1.928 | 2.080 | 0.152 | 1.079 | 0.001 | 15 |
| | 0.093 | 0.001 | 0.452 | 0.451 | 874.875 | 0.007 | 15 |

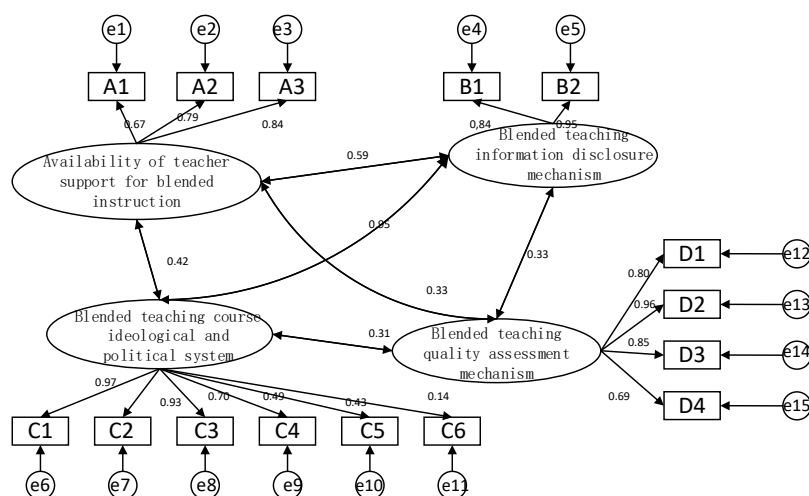


Figure 2. Standardized parameter path diagram of the ideological and political ability evaluation model for hybrid teaching courses in colleges and universities.

From the path diagram of the evaluation model for blended teaching and ideological education competence, it can be discerned that the attainability of support from blended teaching instructors positively influences the mutual effect of the blended teaching information disclosure mechanism, with a path coefficient of 0.59. Similarly, the attainability of support from blended teaching instructors positively impacts the mutual effect of the blended teaching ideological education system, with a path coefficient of 0.42. The blended teaching information disclosure mechanism positively influences the mutual effect of the blended teaching quality assessment mechanism, with a path coefficient of 0.33. Furthermore, the blended teaching ideological education system positively influences the mutual effect of the blended teaching quality assessment mechanism, with a path coefficient of 0.31. It is noteworthy that as the path coefficients increase, the influence of various variables on the ideological education competence of universities also intensifies.

The graph reveals that the blended teaching ideological education system exerts the greatest impact on blended teaching ideological education competence, followed by the blended teaching quality assessment mechanism. Lastly, the attainability of support from blended teaching instructors and the blended teaching information disclosure mechanism, respectively. Ultimately, this demonstrates the positive and affirmative influence of the blended teaching ideological education system on blended teaching ideological education competence. The stronger the blended teaching ideological education system, the more it contributes to addressing unforeseen events in blended teaching.

Within the framework of the blended teaching ideological education system, factors with substantial loadings include the conduct of online and offline teaching drills (A2) and the normalization of student management training (A3), with path coefficients of 0.79 and 0.84, respectively. It is evident that conducting online and offline teaching drills and training in daily life are foundational yet crucial activities. Engaging in online and offline teaching drills and training allows for a deeper understanding of potential hazards and enables individuals to manage online and offline teaching incidents with composure.

In the blended teaching information disclosure mechanism, factors with significant loadings encompass interdepartmental collaboration (B1) and the management system for online teaching resources (B2), with path coefficients of 0.84 and 0.95, respectively. In everyday life, disseminating information with accuracy, fairness, and transparency, along with effective interdepartmental coordination, is fundamental for addressing crises when they occur. Online teaching resources play a pivotal role in blended teaching, and the responsible maintenance of these resources is a critical duty. Establishing an online teaching resource platform facilitates the transmission of knowledge.

Within the blended teaching ideological education system, factors with substantial loadings include the formulation of ideological education policies (C1), the enhancement of the online and offline teaching system (C2), and the cultivation of students' autonomous learning consciousness (C3), with path coefficients of 0.97, 0.93, and 0.70, respectively. Formulating corresponding ideological education policies ensures the quality of blended teaching, enhancing the online and offline teaching system through systematic planning of blended teaching, and fostering students' autonomous learning consciousness are pivotal for improving ideological education competence.

In the blended teaching quality assessment mechanism, factors with the greatest loadings comprise foreseeing various possibilities in students' live situations (D1), improving teacher support (D2), and enhancing student procedural handling (D3), with path coefficients of 0.80, 0.96, and 0.85, respectively. Anticipating diverse learning situations among students and devising different teaching strategies accordingly, alongside the improvement of teacher support and student procedural handling, enhances the flexibility of ideological education competence.

4. Research on paths to improve the quality of ideological and political teaching in hybrid courses in colleges and universities under the background of educational informatization

In the context of educational informatization, the research aims to enhance the quality of ideological and political education in universities through the vehicle of "ideological and political education within the curriculum." It explores an effective path that integrates "knowledge dissemination, skills development, and values guidance." This approach centers on the three-dimensional curriculum development goals of "knowledge dissemination, skills development, and values guidance." It involves unearthing elements of ideological and political education within the curriculum, harnessing the latent nurturing function of the curriculum. This integration ensures the synchronization and synergy of ideological and political theory education with professional education, achieving comprehensive, all-process, and all-staff three-dimensional nurturing within the primary channel of classroom teaching.

Subsequently, it constructs a dual-teaching model, featuring both teacher-led and student-centered approaches, within the context of educational informatization, fostering autonomous learning within the curriculum ideological and political education. This model addresses the issue of harmonizing teacher-student, teaching-learning, learning-thinking, and theory-practice relationships, effectively ameliorating problems such as insufficient teaching hours, inadequate student initiative, insufficient teacher-student interaction, and low efficiency. It explores teaching methods such as "online autonomous learning + flipped classroom + collaborative inquiry learning," "intuitive teaching," "heuristic teaching," and "scenario-experience + case-based teaching" to effectively enhance students' spatial imagination and knowledge application abilities.

4.1 Teacher Professional Development and Training

Teachers are the core force in curriculum ideological and political education in universities, and their professional competence and teaching abilities directly influence teaching effectiveness and student development [10]. In the context of educational informatization, teachers need to continuously enhance their information technology proficiency, familiarize themselves with and flexibly employ teaching tools and resources such as multimedia, online platforms, and virtual laboratories. Therefore, schools should provide teachers with professional training and development opportunities to enhance their teaching abilities and innovative thinking in the educational informatization environment.

Firstly, schools can organize teacher training programs and invite experts and scholars to conduct lectures, introducing the latest developments in educational informatization and teaching methods. The content of these training programs may include the application of educational technology, instructional design and strategies, and the development and utilization of teaching resources. Through these training programs, teachers can learn about and apply advanced educational technologies, improve their

information technology skills, and broaden their teaching approaches and methods.

Secondly, schools can invite experts to give lectures, organize teaching seminars, and facilitate teaching exchange activities to promote experience sharing and teaching interaction among teachers. Expert lectures can invite domestic and international experts with authoritative positions in the field of educational informatization to share their research findings and teaching experiences. Teaching seminars and exchange activities can provide a platform for teachers to communicate and discuss, promoting mutual learning and growth.

In summary, teacher professional development and training are crucial pathways to enhancing curriculum ideological and political education in universities based on educational informatization. By providing professional training, inviting expert lectures, organizing exchange activities, and encouraging teachers to participate in research and projects, teaching abilities can be continuously improved, leading to enhanced teaching quality.

4.2 Learning Resource Development and Sharing

Educational informatization provides diverse learning resources for curriculum ideological and political education in universities, including instructional videos, e-books, online courseware, and more. Schools should strengthen the development and integration of learning resources to ensure their quality and effectiveness [11]. Moreover, schools can establish learning resource sharing platforms to facilitate resource sharing and collaboration among teachers, improving the efficiency and quality of teaching resource utilization.

Firstly, schools can form teacher teams responsible for learning resource development and creation. These teams can consist of teachers and educational technology experts who collaborate to develop and produce teaching resources. Teachers can create multimedia courseware, instructional videos, and other resources that align with students' learning needs based on their teaching requirements and content. Educational technology experts can provide technical support and guidance to ensure the technical quality and usability of the resources.

Secondly, schools can establish a centralized learning resource repository for the management and maintenance of learning resources. This repository can utilize digital management systems to categorize, tag, and index resources for easy retrieval and use by teachers and students. Schools can regularly update and maintain the repository, removing outdated or low-quality resources to ensure the repository remains current and effective.

Additionally, schools can encourage resource sharing and mutual support among teachers. Teachers can upload high-quality teaching resources they have created to the repository, allowing other teachers to download and use them[12]. Schools can establish reward mechanisms to incentivize teachers to actively share resources, thereby enhancing the quality and quantity of available resources. Resource sharing among teachers can promote complementary teaching experiences and teaching resources, enhancing teaching diversity and quality.

In summary, learning resource development and sharing are important pathways to improving curriculum ideological and political education in universities based on educational informatization. By establishing teacher teams, enhancing resource development and management, and encouraging resource sharing and collaboration among teachers, the quality and utilization efficiency of teaching resources can be improved, enriching teaching content and enhancing students' learning experiences and outcomes.

4.3 Student Engagement and Interaction

Within the context of educational informatization, higher education institutions' courses in ideological and political education should encourage students to actively participate and engage, enhancing their initiative and creativity[13]. Institutions can foster opportunities for collaboration and collective knowledge construction through means such as online discussions, collaborative learning, and virtual experiments. Moreover, instructors should encourage students to pose questions, articulate viewpoints, and offer timely feedback and guidance to stimulate students' capacity for critical thinking and innovation.

To commence, educational institutions can introduce online discussion platforms, offering students an open and free forum for communication. Students can deliberate upon issues related to their studies, share insights, and relate experiences through these platforms. Instructors may formulate discussion topics to guide students towards deeper reflection and discourse. Online discussions cultivate the skills

of attentive listening and mutual respect, nurturing critical thinking and teamwork among students.

Furthermore, educational institutions can adopt collaborative learning approaches, motivating students to collectively accomplish learning tasks within small groups. Students can share resources, discuss problems, and collaborate on projects within these groups. Collaborative learning fosters students' abilities to work as a team, solve problems, and engage in innovative thinking. Instructors can play the role of mentors, providing timely guidance and support to facilitate students' learning and growth.

Simultaneously, institutions can harness virtual laboratories and simulated experiment platforms, providing students with opportunities for practical exploration. Virtual laboratories replicate real-world experimental environments and procedures, allowing students to engage in experiment design, data collection, and analysis. Through virtual experiments, students can practice experimental thinking and hone their practical skills.

In summary, encouraging student participation and interaction is a vital avenue for enhancing the quality of higher education institutions' ideological and political education courses in the context of educational informatization. Employing methods such as online discussions, collaborative learning, and virtual experiments creates opportunities for students to collaborate and collectively construct knowledge, fostering their initiative, critical thinking, and innovative potential.

4.4 Personalized Learning and Differentiated Instruction

Educational informatization offers students the opportunity for personalized learning tailored to their interests, abilities, and learning styles. Institutions should acknowledge individual differences among students and implement strategies for differentiated instruction, addressing diverse learning needs and potentials.

To initiate this process, institutions can utilize learning management systems and learning analytics tools to collect and analyze students' learning data. By scrutinizing students' learning behaviors and academic performance, institutions can gain insights into their learning interests, progress, and challenges. Instructors can then customize learning plans and resources, offering personalized learning support and guidance based on students' learning data.

Moreover, institutions can provide diverse learning modes and resources to cater to students' varied learning styles and preferences. Students can choose from online courses, e-books, instructional videos, and other learning resources based on their preferences. Instructors can design a variety of learning tasks and activities to spark students' interest and motivation, aligning with their unique learning styles.

Furthermore, institutions can encourage students to engage in self-directed learning and self-assessment. Students can establish personalized learning plans and strategies in accordance with their learning progress and objectives. They can evaluate their own learning status and effectiveness through self-assessment and reflection, adjusting their learning strategies and methods as necessary. Instructors can offer relevant guidance and feedback, assisting students in enhancing their learning abilities and outcomes.

5. Discussion

(1) By utilizing digital blended teaching resources within the school, conducting searches on the Chinese Journal Full-text Database (CNKI), and collecting over 500 relevant papers through searches on Baidu Wenku and prominent domestic and international university websites, the research project identified topics related to the content and issues in the construction of ideological and political education in universities. It examined the reasons behind these issues and proposed a research agenda. The project also involved field observations and interviews at universities to understand the actual teaching situation and gather student feedback. This approach allowed for an in-depth analysis of the impact and role of educational informatization on ideological and political education.

(2) Through comparative research and analysis of research findings related to the "ideological and political education" models at various domestic universities, differences and similarities in principles, objectives, teaching models, and methods were identified. This led to the identification of common experiences in "ideological and political education" models, which provided insights and references for this research project. The study also involved experimental research with teachers and students at selected universities, employing different teaching models, textbooks, and teaching tools to compare the effects and influences of different teaching methods. This scientific analysis contributed to a more thorough

examination of the quality and effectiveness of ideological and political education.

(3) In the practice of "ideological and political education," a proactive approach was taken to integrate educational resources. Curriculum-based practical teaching was combined with field professional internships, social investigations, university student quality expansion programs, volunteer service activities, and summer rural initiatives. This integration aimed to strengthen students' sense of social responsibility and mission, promote the spirit of volunteering, convey positive energy, and align practical experience with ideological and political education. A comprehensive assessment method and indicator system were designed to evaluate ideological and political education through methods such as questionnaires, teaching achievements assessments, and comprehensive student quality assessments, providing quantitative data to support research conclusions.

6. Conclusion

(1) The implementation of this research will have significant value for the promotion and application of ideological and political education models, evaluation mechanisms, and improvement approaches in universities. Regarding teaching models, the research results will provide practical and feasible teaching models, particularly for conducting ideological and political education in the context of digitization. This will facilitate effective interaction between teachers and students, sharing of teaching resources, and improvement of learning outcomes. In terms of evaluation mechanisms, the research findings will help universities establish scientific evaluation indicators and methods to ensure effective quality control, thereby enhancing the quality of education. In the context of improvement approaches, the research outcomes will offer universities specific methods and practical paths for enhancing the level of ideological and political education. This will assist universities in mastering teaching content and methods, leading to improvements in ideological and political education quality.

(2) As the research project progresses, it will lead more teachers, especially those teaching courses in emerging engineering fields, to recognize the value and role of ideological and political education in basic courses. This will contribute to further improvements in the quality of professional course instruction. Based on surveys of student learning outcomes after course instruction, most students have given positive feedback, indicating significant gains in patriotic awareness, self-directed learning, learning interests, future life planning, and innovation and entrepreneurship capabilities. This has stimulated students' interest and enthusiasm for learning. The reform and practice of ideological and political education in courses have led to several innovative experimental projects initiated by students in recent years. Among them, projects like "Optimization Design of Passenger Car Escape System Based on Hydraulic Model" have obtained national-level project approvals six times and applied for 12 utility model patents and five invention patents. The research outcomes will provide comprehensive guidance and support for ideological and political education in universities.

(3) This research also holds strong social application value. By conducting in-depth research and exploration of ideological and political education in universities, it will provide society with a better pool of talent resources, contributing positively to social harmony and stability. This educational reform project, which relies on industrial enterprises like Yanjian Group and Yantai Taihai Mahnuel Nuclear Power Equipment Co., Ltd. as professional internships bases for students, as well as partnering with these companies for paired service units for ideological and political education, has demonstrated a diversified and three-dimensional form. It is of certain promotional value.

In conclusion, the scope and application value of the research results are extensive. They are of great significance and value for the development of ideological and political education in universities and for the advancement of the education industry. It is hoped that this research will receive support and attention from leaders at all levels and relevant departments, contributing to the innovation and development of ideological and political education in universities.

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References

- [1] Kexin Wang & Shiqian Zhou.(2023).Curriculum Ideological and Political Education: An Educational Philosophy with Distinct Chinese Characteristics. *International Journal of Higher Education*(4). doi:10.5430/IJHE.V12N4P88.
- [2] Shifu Xu & Yanan Jiang.(2023).Exploration and Practice of the Implementation Path of "Fate Classroom" Based on Curriculum Ideological and Political Education—Taking the Course of Mechanical Principles as an Example. *Frontiers in Educational Research*(15). doi:10.25236/FER.2023.061504.
- [3] Tingting Zhang, Guihua Huang & Huitong Liao.(2023).Research on a New Teaching Model Combining "Project Oriented" with Curriculum Ideological and Political Education. *Curriculum and Teaching Methodology*(12). doi:10.23977/CURTM.2023.061203.
- [4] Dongyan Shi, Jiuqiang Wang, Dening Song, Lixia Ying, Xiaoyan Teng, Zhikai Wang & Zhixun Yang.(2023).The Exploration of the Education Mode of Curriculum Ideological and Political Education under the Background of "Double-first-class"—The Design and Practice of Case Teaching Method. *Journal of Educational Research and Policies*(5). doi:10.53469/JERP.2023.05(05).35.
- [5] Caixia Wu.(2023).Exploration on the Innovation Path of College English Teaching from the Perspective of Curriculum Ideological and Political Education. *Frontiers in Educational Research*(9). doi:10.25236/FER.2023.060901.
- [6] Fan Zhang.(2023).Inspiration of Moral Judgment Evaluation Methods on Assessing Curriculum Ideological and Political Education for Foreign Language Courses. *The Educational Review, USA*(3). doi:10.26855/ER.2023.03.011.
- [7] Jing An.(2023).Exploration and Practice of Ideological and Political Work for College Students Based on Curriculum Ideological and Political Education as the Core Taking the Curriculum Ideology and Politics of Marriage and Family Inheritance Law as an Example..(eds.)*Proceedings of the 3rd International Conference on Education: Current Issues and Digital Technologies (ICECIDT 2023)*(pp.214-221)..
- [8] Renli Li.(2023).The Construction and Research of "Curriculum Ideological and Political Education" in the Public Music Education System of Colleges and Universities in the New Era. *Curriculum and Teaching Methodology*(3). doi:10.23977/CURTM.2023.060311.
- [9] Wu Xiao.(2022).Discussion on the Integration of Curriculum Ideological and Political Education into Higher Vocational English Teaching. *Advances in Vocational and Technical Education*(5). doi:10.23977/AVTE.2022.040508.
- [10] Ronghai Wang.(2022).Research on the Application of Mobile Devices and Mind Map in Curriculum Ideological and Political Education. *Curriculum and Teaching Methodology*(11). doi:10.23977/CURTM.2022.051107.
- [11] Xiuguo Bi, Fanling Bu, Chao Liu & Huizhen Yan.(2022).An Analysis of the Integration of Mathematical Culture into Curriculum Ideological and Political Education. *Curriculum and Teaching Methodology*(6). doi:10.23977/CURTM.2022.050620.
- [12] Liling Zou & Youlin Zhang.(2022).A Case Study on the Belief and Practice of Curriculum Ideological and Political Education of Foreign Language Teachers in Colleges and Universities. *Curriculum and Teaching Methodology*(6). doi:10.23977/CURTM.2022.050619.
- [13] Jianyue Ji, Nana Zhao & Xingmin Yin.(2022).Questionnaire Survey and Analysis on the Implementation of Curriculum Ideological and Political Education for Postgraduates Majoring in Economics. *Higher Education Research*(4). doi:10.11648/J.HER.20220704.13.