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Exploration of the Integration of Ideological and Political Education with Artificial Intelligence in Higher Vocational Colleges

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Abstract: With the rapid development of generative artificial intelligence, ideological and political (I&P) education in higher vocational colleges is transforming toward personalization and precision. Supported by AI technologies such as content generation, algorithm recommendation, and multimodal interaction, I&P education has been comprehensively upgraded and innovated in content production, interactive processes, and evaluation feedback. However, technological empowerment does not progress linearly, and many practical dilemmas have emerged in the integration of AI and I&P education. This paper expounds the integration dilemmas from the dimensions of algorithmic bias, technological dependence, and data overreach, and then constructs a personalized and precise I&P education model from the aspects of technical infrastructure construction, content supply innovation, evaluation paradigm transformation, and subject literacy improvement. It aims to promote the integrated leap of I&P education and artificial intelligence, and provide theoretical reference and practical approaches for the implementation of the fundamental task of fostering virtue through education in the new era.

Keywords: Artificial intelligence; Ideological and political education; Personalized education; Precise education; Human-machine collaboration

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1. Introduction

With the popularization and application of generative artificial intelligence, large language models have become important tools that profoundly reshape the educational ecology. Supported by technologies including natural language processing, deep learning, big data analysis, and multimodal fusion, they have effectively broadened the innovative paths of I&P education and provided important support for personalized learning, immersive interaction, and knowledge graph construction. However, technology is never a value-neutral tool. While promoting the innovation of I&P education, generative artificial intelligence also brings risks such as technological rationality overriding value rationality and algorithmic logic dispelling humanistic care.

Therefore, how to make technology truly serve the fundamental goal of "fostering virtue through education" has become a core issue that must be addressed at present.

2. Practical problems in the integration of ideological and political teaching and artificial intelligence in higher vocational colleges

2.1. Algorithmic bias and ideological security risks

Algorithms are the core of generative artificial intelligence, but inherent biases often exist in algorithm design logic, training data, and application scenarios, thus threatening the education of mainstream ideological and value identity. Specifically, first, ideological deviations in training data will affect education through content generation, such as negative thoughts like extreme individualism and historical nihilism. Second, "algorithmic hallucinations" may lead to distortion and inaccuracy of educational content. When information is insufficient or misunderstood, AI-generated content may seem reasonable but contain errors, which can lead to mistakes in the restoration of revolutionary history, interpretation of theoretical concepts, and analysis of policy spirits in I&P education [1]. Third, algorithm recommendations may form an "information cocoon". Recommendation algorithms aim to improve user stickiness, so the content pushed is often based on users' existing cognition. In I&P education, this recommendation method will lock students' value cognition, prevent them from accessing diverse viewpoints, and deprive them of the ability of value reflection and dialectical thinking.

2.2. Technological dependence and crisis of educational subjectivity

The high convenience and intelligence of AI make teachers and students prone to dependence, even causing the dual dissolution of teachers and students as subjects. First, the dissolution of teachers' dominant position and the migration of professional authority. In the traditional educational context, teachers are the leaders of teaching, responsible for content interpretation and value guidance, but AI will gradually replace part of teachers' responsibilities, which will affect their professionalism and authority over time. Second, the degradation of students' independent thinking and the trap of cognitive outsourcing. AI can help students complete data retrieval, paper writing, problem solving and other tasks, but once students get used to it, their independent thinking ability may degrade, and they may even gradually lose core thinking abilities such as knowledge construction, contradiction analysis, and systematic reflection [2]. Third, the "human-machine-human" interaction mode leads to the alienation of intersubjectivity. The interaction of virtual roles lacks emotional connection, the values conveyed lack deep resonance, and it also reduces the frequency of interaction between teachers and students.

2.3. Data overreach and ethical anomie in educational evaluation

Data collection and analysis are prerequisites for AI to achieve precise education, but data expansion may lead to overreach and ethical risks. First, quantitative logic simplifies and obscures moral development. The core of I&P education is to strengthen students' ideological concepts, political awareness, and moral qualities. However, data collection and analysis are based on quantitative logic, which transforms complex value judgments into data symbols and may lead to one-sided and superficial evaluation. Second, the imbalance between privacy boundaries and data power. The construction of precise portraits requires multi-dimensional data such as students' learning trajectories, social interactions, and emotional responses, which may infringe on students' privacy. At present, there are no clear norms for data collection, usage rights, and storage requirements,

which easily leads to the problem of "data surveillance" [3]. Third, the algorithm black box and the dilemma of interpretability of evaluation results. Precise evaluation relies on the computing logic of large models, but teachers and students can only get the generated evaluation results without knowing the specific logical basis, which makes the evaluation process fall into an "algorithm black box", resulting in unexplainable I&P education evaluation and negatively affecting its legitimacy and credibility.

3. Paths for the integration of ideological and political teaching and artificial intelligence in higher vocational colleges

3.1. Build a human-machine collaborative intelligent I&P technical infrastructure

Building a technical infrastructure is the primary measure to support generative AI in achieving personalized and precise education. Schools should emphasize the overall construction of "technology + system + humanities" to highlight humanistic connotation while enhancing efficiency through technological empowerment.

First, build a high-quality data infrastructure to achieve global data integration and intelligent governance. For example, Fujian Province, relying on the experience of "Digital Fujian" construction, guides higher vocational colleges to break through departmental barriers and promote the establishment of a data collaboration system among academic affairs, student affairs, library, logistics and other departments. This link focuses on optimizing data governance, establishing data quality rules, clarifying the processes and specifications of data cleaning, desensitization, and monitoring, so as to build an intelligent service scenario where "data can be traced and responsibilities can be implemented".

Second, develop vertical-domain intelligent models to promote the deep integration of technology and education. There is a lack of efficient adaptation mechanisms between precise I&P education and general large models, so it is necessary to develop independent large models specialized in the field of I&P education based on AI capability platforms such as DeepSeek and Tongyi Qianwen. For example, Fujian Province, relying on local industrial advantages, jointly builds the "Min-Style I&P" vertical large model with the "AI +" interdisciplinary platform of Fuzhou University, the database of Xiamen University, and leading digital enterprises in the province [4].

Third, establish a human-machine collaborative work paradigm that combines efficiency improvement and humanistic care. Higher vocational colleges should set up a "human-machine collaboration" mechanism: on the one hand, assign tasks such as data sorting, progress reminders, and basic Q&A to AI tools to simplify teachers' workload; on the other hand, leave ideological, targeted, and emotional educational tasks to teachers to strengthen emotional interaction between teachers and students. In addition, an intelligent early-warning mechanism of "regular monitoring + precise identification + intelligent early warning + personalized decision-making" should be established [5], so that teachers can take the initiative to intervene and guide after AI tools find problems.

3.2. Innovate precisely adapted content supply and interaction modes

Higher vocational colleges should balance the application of generative AI and the innovation of I&P education concepts to achieve personalized and precise educational goals.

First, establish a "thousand-person-thousand-face" precise push mechanism. Teachers should use large models to build student portraits and demand tags to support AI in generating differentiated educational

resources. For example, for students with weak theoretical foundations, short "micro-Party lessons" can be recommended, presenting the historical enlightenment of "building the Party ideologically and building the army politically" from the Gutian Conference [6]; for students who are not good at case analysis, I&P special topics on social governance can be recommended for intensive training, such as introducing vivid cases of private economic development in the "Jinjiang Experience".

Second, create immersive interactive scenes. Higher vocational colleges should promote the integration of AI with VR/AR technologies to create highly simulated educational scenes. For example, restore the Gutian Conference site, the Changting revolutionary sites and other scenes to allow students to talk with virtual revolutionary figures; build a virtual "Maritime Silk Road" venue for students to participate in quiz and challenge activities [7].

Third, establish an intelligent learning companion and an emotional accompanying mechanism. Continuous care is an important path of I&P education. Teachers can deploy special dialogue models based on AI to provide students with real-time online Q&A, study reminders, emotional counseling, and psychological support. Through the construction of intelligent learning companion relationships, new interactive relations between teachers and students can be guided, promoting the intellectualization of the educational environment, virtualization of communication scenarios, and deepening of two-way interaction.

3.3. Reshape a value-guided data-driven evaluation paradigm

In I&P education, evaluation is not simply for "scoring" or "classification", but to better understand, serve, and guide students through evaluation. Therefore, higher vocational colleges need to establish a data-driven evaluation system supported by AI and strike a balance between precision and value guidance.

First, build a multi-dimensional evaluation model. Higher vocational colleges should establish a three-dimensional AI evaluation model of "value + behavior + emotion". The value dimension takes students' understanding and recognition of mainstream values as the evaluation point; the behavior dimension focuses on students' daily performance and practical participation. For example, Fujian can highlight the "Min-Style" characteristics, focusing on students' participation in "Three Going to the Countryside" activities, rural revitalization services, visits to enterprises with "Jinjiang Experience", volunteer services for the Digital China Summit, etc. [8]; the emotional dimension focuses on attitude tendency and emotional resonance.

Second, strengthen the developmental function of evaluation. Higher vocational colleges should embed evaluation into the whole process of students' learning based on the dynamic analysis ability of AI. For example, Fujian can rely on the achievements of "Smart Campus" construction, combine interaction data from "one-stop" student communities and online I&P platforms to generate personalized ability maps showing students' strengths and weaknesses [9].

Third, establish an interpretable evaluation mechanism. To avoid damage to the legitimacy of evaluation caused by the algorithm black box, higher vocational colleges should establish an interpretable evaluation mechanism. On the one hand, optimize algorithm design and translate the evaluation generation logic into content understandable to teachers and students. On the other hand, establish a human-machine collaborative evaluation review mechanism, where teacher teams review and explain AI evaluation conclusions.

3.4. Improve teachers and students' digital literacy in the intelligent era

The effectiveness of generative AI in empowering I&P education depends on the people who use the technology. Higher vocational colleges should also improve the intellectual literacy of teachers and students to

establish a deep-seated guarantee.

First, cultivate teachers' intelligent educational literacy. Higher vocational colleges should establish a development mechanism for teachers' digital literacy, requiring teachers to take the initiative to master intelligent technology, understand the basic principles and educational application scenarios of AI, critically examine AI-generated content, identify potential biases and errors, and master teaching design skills for human-machine collaboration.

Second, foster students' critical thinking and independent cognitive ability. Contemporary college students are generally sensitive to technology but mostly lack critical awareness. Higher vocational colleges should emphasize the defects and negative impacts of AI tools, guide students to understand the recommendation logic of algorithms, guard against "information cocoons" [10], and develop the habit of questioning and reflection so as not to follow blindly or believe easily.

Third, build an intelligent education community for the common growth of teachers and students. Higher vocational colleges should establish a common growth mechanism for teachers and students around the process of teacher-student interaction. Teachers can take the initiative to learn relevant technologies from students, and students can establish correct value judgments and develop deep thinking habits through teachers. This urges teachers and students to jointly discuss value adherence and ethical boundaries in the intelligent era, so as to safeguard the true pursuit of education in the flood of technology.

4. Conclusion

In summary, the deep integration of artificial intelligence and I&P education reform is both an inevitable trend of technological development and an era proposition of educational reform. The core of solving this proposition is not how to install the latest technology into I&P education, but how to make technology serve the fundamental goal of fostering virtue through education. Although generative artificial intelligence has many defects and application dilemmas, I&P education reform must eventually coordinate with technological development to truly achieve personalized and precise education goals. With the continuous iteration of AI technology, I&P education will embrace more possibilities. Higher vocational colleges should continue to explore deeper immersive learning scenarios, smarter human-machine collaboration, more precise individual growth support, and richer content presentation forms, so as to maintain a dialectical tension between technological empowerment and value guidance.

Disclosure statement

The author declares no conflict of interest.

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