The Value Implication and Internal Mechanism of AI Empowerment for Precision Teaching in Ideological and Political Courses in Colleges and Universities

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Abstract: The empowerment of precision teaching in ideological and political (I&P) courses in colleges and universities through artificial intelligence (AI) holds significant practical value. Its internal requirements include: capturing the developmental characteristics of students, responding to their actual needs, stimulating their intrinsic motivation, and adhering to a student-centered evaluation orientation. The concrete strategies involve: empowering accurate student profiling through multimodal analysis; empowering precise content delivery through intelligent algorithms; empowering targeted instructional guidance through interactive scenarios; and empowering accurate evaluation through human-machine collaboration, thereby continuously enhancing the level of precision teaching.

Keywords: artificial intelligence; colleges and universities; ideological and political course teaching; precision teaching

1. Introduction

In recent years, "precision ideological and political education" has emerged as a prominent topic in the field of ideological and political course teaching in higher education institutions. Although academic consensus on the precise definition of precision ideological and political education has yet to be fully established, it is widely regarded as a practice-oriented activity aimed at accurately grasping the pedagogical requirements and core essence of ideological and political education. Its ultimate goal is to implement teaching through a targeted, drip-irrigation approach to achieve precision in talent cultivation, thereby enhancing the overall effectiveness of ideological and political education. In the era of artificial intelligence, technological empowerment has facilitated the realization of precision teaching concepts in higher education, while also providing robust support for advancing the precision of ideological and political (I&P) course instruction in universities[1]. The development of artificial intelligence can promote the optimization of teaching supply in higher education and align closely with students' developmental needs. For I&P courses in universities, teaching will continue to integrate and evolve alongside artificial intelligence. The advancement of AI technologies offers a critical driving force for enhancing the quality and efficiency of I&P instruction. Therefore, it is essential to deeply examine the value implications and internal requirements of AI-enabled precision teaching in I&P courses, and to further explore viable pathways for such integration.

2. The Value Implication of AI Empowerment for Precision Teaching in Ideological and Political Courses in Colleges and Universities

The fundamental task of ideological and political courses is moral cultivation and character development, which plays an irreplaceable and critical role in fostering a new generation for the new era. As independent individuals, college students not only exhibit unique characteristics in their learning processes during ideological and political (I&P) courses but also demonstrate variability in their learning abilities. To address the challenges of I&P teaching, enhance its effectiveness, and improve its quality—with the ultimate goal of nurturing students' minds and achieving precise and effective education—ideological and political education must meet the demands of precision-oriented instruction.

For institutions of higher learning, the precision teaching of I&P courses entails the accurate alignment of all key elements involved in the teaching process. Under the influence of artificial intelligence, the structure and form of I&P instruction are undergoing significant transformations, providing strong momentum for enhancing the level of instructional precision. Precision teaching in college I&P courses implies that instructional practices must be conducted under the guidance of a precision teaching philosophy, in order to promote the accurate matching of teaching components and ensure the efficient coordination of all instructional processes, thereby achieving the goal of targeted moral education. It is important to clarify that the effectiveness of precision ideological and political education is directly determined by the degree to which precision is achieved. Therefore, how to realize precision in I&P instruction in higher education is a matter worthy of in-depth investigation. In the rapidly developing era of artificial intelligence, improving the effectiveness of I&P courses and exploring more suitable and impactful pathways for their precision delivery has become a focal point in academic discourse. Specifically, the empowerment of I&P teaching through artificial intelligence can provide both service support and technical assistance for enhancing instructional precision in universities. This precision encompasses several dimensions: accurate understanding of student characteristics, precise structuring of instructional content, and precise assessment of learning outcomes.

The empowerment of I&P course teaching in colleges and universities through artificial intelligence (AI) holds significant practical relevance, offering new perspectives for addressing the persistent challenges in I&P education. On the one hand, AI-driven precision teaching in I&P courses can effectively mitigate existing issues such as insufficient targeting and limited effectiveness. On the other hand, integrating AI into precision teaching aligns with the imperatives of advancing information technology and represents an inevitable trend in the development of smart education. In the new era, China's I&P teaching in higher education has become increasingly diversified in pedagogical models and enriched in content, which has substantially enhanced instructional outcomes. Nevertheless, problems such as limited efficacy and insufficient student engagement persist. Therefore, improving the targeting, engagement, and effectiveness of I&P courses remains central to strengthening ideological and political education in colleges and universities. Guided by the logic of precision thinking, this approach is particularly conducive to enhancing the specificity of I&P instruction, advancing precision ideological and political education through multiple levels, dimensions, and elements[2]. This indicates that the concept of AI empowerment for precision teaching in I&P courses provides innovative pathways to resolve the deep-rooted difficulties in I&P education within higher education institutions.

The fundamental mission of education and teaching in colleges and universities lies in moral cultivation and character development. The empowerment of I&P course teaching through AI offers a new pathway for effectively fulfilling this mission. I&P courses in higher education bear significant responsibilities and historical missions entrusted by the times; they are not only vital to cultivating high-quality, well-rounded socialist builders, but also essential to shaping college students' scientific worldviews, outlooks on life, and value systems—ultimately guiding them to become useful talents for society. Therefore, advancing precision in I&P course teaching contributes to individualized student development, enabling targeted improvement of their ideological and political literacy. This, in turn, embodies a critical dimension of the mission of moral cultivation and character development in colleges and universities. With the integration and application of technologies such as artificial intelligence and "Internet Plus" in educational contexts, contemporary college students are demonstrating stronger demands than ever before for intelligent, diversified, and personalized learning experiences.

As such, the integration of AI into I&P course teaching can facilitate precision teaching, keeping pace with both the era and the students themselves. This alignment offers a new avenue for the better realization of the fundamental educational mission.

3. Internal Mechanism of AI Empowerment for Precision Teaching in Ideological and Political Courses in Colleges and Universities

Artificial intelligence has brought about profound impacts on all aspects of social production and daily life, which in turn is catalyzing a transformation in ideological and political (I&P) course teaching. The logic underlying AI empowerment for precision in I&P courses lies in the embedding of intelligent technologies to enhance quality and efficiency. This process entails accurately identifying students' characteristics, effectively responding to their needs, and stimulating their intrinsic motivation[3]. It is crucial to emphasize that the integration of AI must not be mechanical or superficial; rather, it requires deep integration into every component and stage of teaching—achieving a seamless fusion akin to "salt dissolving in water."

3.1. Precisely Focusing on Students' Developmental Characteristics

Students are the primary subjects of I&P education, characterized by a combination of commonality and individuality— differences that manifest in areas such as abilities and interests. I&P courses in colleges and universities serve to guide students in establishing correct values and shaping a rich inner world[4]. As active agents, students can, under the guidance of I&P instructors, be inspired to activate their initiative, awaken their inner selves, form shared value recognition, and experience emotional resonance. Therefore, accurately capturing students' developmental characteristics is of critical importance. This includes their individual personality traits, behavioral patterns, and spiritual aspirations, which should serve as the basis for instructional strategies and pedagogical methods. Doing so facilitates a deeper understanding of student needs and helps to mobilize their subjective initiative. Specifically, grasping student development entails, on the one hand, comprehensively understanding the value orientations of the broader college student population and anticipating behavioral tendencies based on prevailing patterns among the majority. On the other hand, it requires a holistic analysis of individual student characteristics, aligning both common and personalized learning needs to devise instructional strategies that cater to the majority while also addressing the specific needs of minority student groups. However, due to limitations imposed by external factors such as technology and resources, college I&P instructors often lack sufficient and comprehensive understanding of their students, leading to suboptimal accuracy in constructing student profiles.

In this context, artificial intelligence, through its multimodal analysis tools, can significantly enhance precision teaching in I&P courses by facilitating student profiling. Such profiling involves virtually representing users' characteristics and attributes through labels. By employing AI-driven multimodal learning analytics tools, it becomes possible to generate accurate portrayals of college students' learning processes and outcomes. Leveraging artificial intelligence technologies, multimodal learning analytics tools collect and analyze learning data by capturing media and data-related information. Through these tools, AI is capable of not only reflecting students' overall ideological and behavioral performance but also predicting their future learning demands and ideological development trends[5]. Moreover, AI can accurately depict individual students' learning characteristics. This facilitates a comprehensive understanding of each student's ideological quality and behavioral trajectory, thereby integrating systemic insights with individualized analysis. Such integration is conducive to the effective implementation of precision teaching.

3.2. Precisely Addressing the Real Needs of Students

Every student is an individual with concrete needs, encompassing aspects such as survival, daily life, and academic learning. Therefore, I&P course instruction must align with students' real-life needs and their expectations of benefits. Colleges and universities should begin with a deep understanding of students' actual demands and strive to achieve a match

between supply and demand, which is essential for continuously enhancing the teaching effectiveness of I&P courses. If the dissemination of knowledge and pedagogical concepts in ideological and political theory courses fails to correspond to the developmental needs of individual students or the demands of future society—or if it is perceived by students as idealized and detached content—it will ultimately be difficult to elicit genuine resonance and ideological identification among learners[6]. At the same time, it is critical to recognize that students come from diverse family backgrounds and growth environments, and that there are inherent differences in their levels of moral development and psychological resilience. This reality necessitates that I&P course instruction take into account the physical and mental characteristics of students and align with their "emotional and psychological developmental needs," using these as a foundation for implementing targeted pedagogical guidance. It is undeniable that the traditional, undifferentiated, one-size-fits-all approach to teaching fails to capture students' enthusiasm and has demonstrated limited effectiveness in the context of I&P education in higher education. By contrast, a shift toward a precision-drip irrigation model in I&P teaching—designed to meet students' intrinsic demands—represents the strategic direction for educational transformation.

In the era of artificial intelligence, it is now possible to transform the drip-irrigation model of ideological and political (I&P) course teaching in colleges and universities into reality through algorithmic support. Algorithms serve as a bridge between users and information via programmatic code, offering a streamlined channel for information dissemination. Functionally, an algorithm is a system of program operations capable of accurately identifying and filtering users' behavioral traits, discerning their preferences and interests, and classifying and delivering such data to the corresponding users. This process enables effective value identification and alignment with user profiles. In the long term, the trend of artificial intelligence is moving toward the realization of personalized, diversified, and customizable services—marking the path toward functional refinement and technological maturity. Within the context of I&P teaching in higher education, AI algorithms can empower instructors with a comprehensive understanding of their students. Through intelligent content distribution, these algorithms can provide learners with personalized instructional materials, facilitating the integrated development of students' moral character, ideological orientation, and emotional well-being. Moreover, AI can generate "tailored" learning plans to meet the developmental needs of diverse student populations.

3.3. Precisely Stimulating Students' Intrinsic Motivation

As an objective existence, the environment exerts a significant influence on individuals within it, particularly on their thoughts and behaviors. In essence, humans rely on their environment for survival and development; however, they are not merely passive recipients of environmental influence but rather possess subjectivity and agency. In the context of I&P education in colleges and universities, the creation of an appropriate instructional environment serves as a prerequisite for the effective implementation of the teaching process. It plays a pivotal role in fostering students' capabilities and character development, functioning with guiding, inspiring, and facilitative effects. For educators, designing immersive teaching scenarios is instrumental in arousing students' interest and intrinsic motivation. Such environments enhance situational experiences and cultivate an inspiring and aspirational classroom atmosphere. In doing so, they help activate students' internal drives for knowledge acquisition, ideological formation, and moral development. This, in turn, supports students in strengthening their ideological cognition and elevating their level of moral cultivation and character development.

AI possesses the capability of scenario reconstruction, thereby empowering the creation of innovative teaching environments for ideological and political (I&P) courses in colleges and universities. With the integration of AI, the teaching environment of I&P courses has undergone profound transformation, enabling students to shift their learning spaces into virtual cyberspace. The interplay between virtual and real environments often stimulates students to engage in deeper reflection and leaves them with lasting impressions, thereby effectively fostering intrinsic motivation. In summary, the application of AI in the instructional scenarios of I&P courses offers robust technological support for the reconfiguration of teaching contexts and the reconstruction of instructional spaces. It breaks through the constraints of traditional pedagogy and significantly enhances students' internal drive for learning.

3.4. Precisely Enhancing Autonomous and Self-Regulated Learning Abilities

Amid the ongoing wave of educational transformation, artificial intelligence is paving new pathways for precisely enhancing students' capacities for autonomous learning through its distinctive advantages. From the perspective of cognitive psychology, autonomous learning emphasizes learners' self-monitoring, self-regulation, and reinforcement throughout the learning process. AI technologies align closely with these theoretical foundations, providing powerful tools to support students in achieving efficient and self-directed learning.

Personalized learning path planning serves as a crucial entry point for artificial intelligence to enhance students' autonomous learning capabilities. Learning is inherently a process of active knowledge construction by students, rather than passive reception. AI has the potential to create personalized learning environments for I&P education tailored to individual university students. By collecting and analyzing multidimensional behavioral data from students during I&P course engagement—such as participation in classroom questioning, completion of assignments, and activity levels in online discussions—AI can accurately assess each student's knowledge mastery and learning preferences. For instance, for students who prefer visual learning, intelligent learning systems can recommend high-quality documentaries and animated short films aligned with key I&P topics. A typical example would be animated series depicting the history of modern China, which use vivid and engaging imagery to facilitate the understanding of abstract I&P concepts. Conversely, for students with strong logical reasoning abilities, the system can provide in-depth theoretical articles and academic lecture videos. These resources enable students to actively explore knowledge at their own pace and construct a personalized knowledge framework in I&P education, thereby significantly enhancing their autonomy in the learning process.

From the perspective of motivation theory, Self-Determination Theory emphasizes the enduring role of intrinsic motivation in learning. Artificial intelligence can stimulate college students' intrinsic motivation to engage in I&P course learning through diverse approaches. On the one hand, technologies such as Virtual Reality (VR) and Augmented Reality (AR) can be employed to create highly immersive I&P learning environments. For instance, during instruction on revolutionary (Red) culture, students can utilize VR devices to "visit" historical revolutionary sites—such as the site of the Zunyi Conference—immersing themselves in the steadfast beliefs and heroic spirit of revolutionary pioneers. This transforms I&P education from a textbook-bound process into an experience enriched with immersive authenticity, thereby stimulating students' interest in actively exploring the deeper ideological values embedded in I&P knowledge. On the other hand, real-time feedback and intelligent tutoring provide strong support for students' autonomous learning. AI assumes the role of an intelligent mentor by offering immediate feedback when students complete specific I&P learning tasks— such as composing high-quality I&P-themed essays or presenting original insights during group discussions. Feedback may include awarding corresponding points or virtual honor badges, which enhances students' sense of competence and accomplishment. This real-time feedback enables students to clearly identify issues in their learning process, promptly adjust learning strategies, continuously refine their study methods, and enhance both their confidence and competence in autonomous learning. Ultimately, this support fosters sustained self-directed learning motivation.

Moreover, college students' learning behaviors are influenced by their surrounding environment and role models. The interactive communication platforms powered by artificial intelligence transcend spatial and temporal constraints, facilitating discussions on ideological and political topics among university students nationwide and even globally. Students are exposed to the profound insights of peers from diverse regions and backgrounds, thereby forming a high-quality reference group for I&P learning. At the same time, AI systems can recommend distinguished scholars and exemplary figures in the field of ideological and political education, offering students tangible role models and motivating them to actively engage in I&P learning. Through ongoing interaction and dialogue, students continually improve their self-directed learning capabilities. This process not only reshapes the future landscape of education but also nurtures a new generation of talents endowed with independent inquiry and innovative thinking in the era of AI.

4. Conclusion

Undoubtedly, the advancement of artificial intelligence has expanded the developmental space for ideological and political course teaching in colleges and universities. In particular, the application of virtual scenarios and other AI-driven tools has enabled I&P instruction to move toward greater precision in areas such as learner profiling and analysis. These innovations offer targeted solutions to the practical challenges currently facing I&P education in higher education institutions. Therefore, I&P course teaching in colleges and universities should deepen the integration of artificial intelligence technologies to better fulfill its fundamental mission of moral cultivation and character development. At the same time, it is essential to remain vigilant against the potential risk of weakening the educational function due to overreliance on technological applications.

Disclosure statement

The author declares no conflict of interest.

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