

From "Technical Assistance" to "Human-Machine Synergy": Reconstruction and Innovation of Scenario-based Teaching Models in Civics Courses from the Perspective of Generative AI

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Abstract: With the breakthrough progress of Generative Artificial Intelligence (AIGC) technology, the teaching of Ideological and Political Theory Courses (hereinafter referred to as "Civics Courses") in universities is facing a critical node of transformation from digitization to intelligence. For a long time, technology has mostly played the role of an "auxiliary tool" in Civics teaching, suffering from pain points such as solidified scenarios, superficial interactions, and insufficient personalization. Generative AI, with its unique knowledge generation capabilities, multimodal context construction abilities, and human-like interaction logic, provides an opportunity for Civics teaching to shift from the paradigm of "Technical Assistance" to "Human-Machine Synergy." Based on the practical needs of the reform and innovation of Civics Courses in the new era, this paper deeply analyzes the theoretical connotation of the "Human-Machine Synergy" teaching model. It systematically reconstructs the practical model of scenario-based teaching in Civics Courses from three dimensions: the "Dynamic Knowledge Graph" in theoretical teaching, the "Virtual-Real Twinning" in practical teaching, and "Intelligent Decision-Making" in social services. Furthermore, addressing the potential loss of teacher subjectivity, algorithmic bias, and ethical risks in human-machine synergy, this paper proposes building a governance mechanism of "Value Leadership, Dual-Teacher Synergy, and Ethical Regulation," aiming to provide theoretical support and practical solutions for promoting the high-quality development of university Civics Courses.

Keywords: Generative AI, University Civics Courses, Scenario-based Teaching, Human-Machine Synergy, Teaching Model Reconstruction.

1. Problem Statement: "Technical Bottlenecks" and "Intelligent Opportunities" in the Digital Transformation of Civics Teaching

Ideological and Political Theory Courses are key courses for implementing the fundamental task of fostering character and civic virtue. Entering the new era, information technology represented by the Internet and Big Data has greatly enriched the teaching means of Civics Courses, promoting the vigorous development of "Internet + Civics." However, examining the current digital practices of Civics teaching, we find that it still largely remains at the "Technical Assistance" stage of Web 2.0, facing deep-seated bottlenecks and challenges.

On one hand, there is the issue of solidified scenarios and fragmented experiences under the "Technical Assistance" paradigm. In traditional digital teaching, technology mainly serves as a carrier for information presentation (e.g., PPT, micro-videos, MOOC platforms). Although the acquisition of teaching resources has become convenient, the teaching scenarios remain preset, static, and unidirectional. Students face cold screens rather than vivid truths, and Civics Courses still struggle to break free from the mold of "inculcation," making it difficult to achieve "immersive" emotional experiences and value resonance [1].

On the other hand, there is a contradiction between students' personalized needs and standardized supply. College

students born after 2000 and 2005, as "Digital Natives," have active thinking and diverse needs. However, traditional teaching platforms based on retrieval technologies can only provide standardized knowledge supplies and cannot offer precise personalized guidance tailored to students' ideological confusion, academic backgrounds, and cognitive characteristics, leading to a mismatch between the supply side and the demand side of Civics teaching.

Since late 2022, the explosion of Generative Artificial Intelligence (Generative AI) technologies, represented by ChatGPT, ERNIE Bot, and Sora, marks a new stage of AI moving from "Discriminative" to "Generative." Generative AI not only possesses powerful natural language processing and logical reasoning capabilities but can also generate text, images, videos, and even virtual code in real-time based on instructions, demonstrating amazing creativity and interactivity. General Secretary Xi Jinping emphasized: "Artificial Intelligence is a strategic technology leading this round of scientific and technological revolution and industrial transformation, possessing a 'head goose' effect with strong spillover and driving force." [2]

The emergence of Generative AI offers a new "Intelligent Opportunity" to break through the "Technical Bottlenecks" of Civics teaching. It is no longer merely an external auxiliary tool but has the potential to become part of the "teaching subject," shifting the teaching paradigm from "humans operating tools" to "humans working synergistically with intelligent agents." This paper aims to explore how to

reconstruct the scenario-based teaching model of Civics Courses from the perspective of Generative AI, achieving the leap from "Technical Assistance" to "Human-Machine Synergy." This has significant theoretical value and practical significance for improving the pertinence and effectiveness of Civics Courses.

2. Paradigm Shift: Theoretical Logic from "Technical Assistance" to "Human-Machine Synergy"

To understand the reconstruction of the teaching model of Civics Courses, we must first clarify the internal logic of the paradigm shift from "Technical Assistance" to "Human-Machine Synergy." This is not only a change in the depth of technology application but also a fundamental transformation in educational concepts, subject relationships, and teaching processes.

2.1. Scrutiny of the Limitations of the "Technical Assistance" Paradigm

In the "Technology-Assisted Instruction" paradigm, technology is viewed as an extension of the teacher's limbs or a container for teaching content. Its core features are the dominance of "Instrumental Rationality" and the absence of "Intersubjectivity."

Instrumentality and Passivity: Technology is in a completely dominated position, with its functions limited to displaying preset content and improving transmission efficiency. For example, using multimedia to play documentaries or using question banks for automatic grading. Although this model improves teaching efficiency, it does not change the linear structure of knowledge production and dissemination.

Disembodiment and Superficiality: Teaching scenarios are often simple digital mappings of physical spaces (such as online classrooms), lacking embodied interactive experiences. Students' interaction with technology mostly remains at superficial levels like clicking and browsing, making it difficult to touch deep thinking agitation and value internalization.

2.2. Connotation and Characteristics of the "Human-Machine Synergy" Paradigm

"Human-Machine Synergy" refers to a new type of relationship form in which human teachers and AI systems, based on their respective advantages, complete teaching tasks and create teaching value through deep interaction and division of labor during the teaching process. In Civics teaching, this paradigm presents the following new characteristics:

Extension and Enhancement of Subjectivity: AI is no longer a cold tool but an intelligent partner (Copilot) with certain "quasi-subject" characteristics. It can share teachers' repetitive labor (such as knowledge retrieval and homework grading) and assist teachers in creative generation and strategy optimization, thereby extending teachers' teaching capabilities and wisdom boundaries.

Generativity and Dynamism: Teaching content is no longer solidified textbook text but a dynamic knowledge flow generated instantly during the interaction between teachers, students, and AI. AI can generate cases, simulate situations, or refute viewpoints in real-time according to the direction of classroom discussion, filling the teaching process with

uncertainty and creative tension.

Personalization and Precision: Based on the deep learning capabilities of large models, AI can build exclusive "cognitive portraits" and "learning paths" for each student, realizing individualized instruction in the true sense.

2.3. Necessity of Paradigm Shift: Return to the Essential Attributes of Civics Courses

The essence of Civics Courses is to reason clearly; it is the work of value shaping and soul engineering. Traditional "Technical Assistance" often easily falls into the trap of "technological showing off," leading to "emphasizing form over content." The "Human-Machine Synergy" paradigm emphasizes the deep integration of technology and humans, aiming to release teachers' energy through AI computing power, allowing teachers to return to the standard of "educating people"—that is, focusing on emotional communication, value leadership, and ideological clarification. Therefore, the transformation from "Technical Assistance" to "Human-Machine Synergy" is an inevitable choice for the return from technological logic to educational logic, and it is also the only way to improve the affinity and pertinence of Civics Courses [3].

3. Model Reconstruction: Three-Dimensional Landscape of Scenario-based Teaching Empowered by Generative AI

Based on the concept of "Human-Machine Synergy," we attempt to reconstruct the scenario-based teaching model of university Civics Courses. This model breaks the space-time boundaries of traditional classrooms and, through Generative AI technology, builds a new teaching ecosystem integrating "Theoretical Cognitive Scenarios," "Virtual Practical Scenarios," and "Social Service Scenarios."

3.1. Theoretical Teaching Scenarios: Chain Construction of "Knowledge-Value" Based on Dynamic Graphs

Theoretical teaching is the foundation of Civics Courses, aiming to solve the problem of "knowing." Addressing the issues of abstract dryness and logical rupture in traditional theoretical teaching, the human-machine synergy model achieves reconstruction through the following paths:

(1) AI-Assisted Dynamic Generation of Knowledge Graphs:

Utilizing Large Language Models (LLMs) to deeply structure Marxist classics, the Party's innovative theories, and massive current affairs materials. In the classroom, teachers no longer read strictly from the book but use instructions to drive AI to construct visual knowledge graphs in real-time. For example, when teaching "Chinese Modernization," AI can instantly generate a logical evolution diagram from "common characteristics of modernization in various countries" to "Chinese characteristics," and dynamically expand detailed cases and data support for a certain branch (such as "huge population scale") based on students' questions. This dynamic graph not only displays the breadth of knowledge but also reveals the logical depth of the theory.

(2) "Socratic" Human-Machine Debate Scenarios:

Introducing an "Intelligent Debate System" based on Generative AI. Teachers set controversial or analytical topics

(such as "Capital Logic and Social Justice"), and students conduct real-time debates with AI debaters. AI can quickly retrieve massive arguments and conduct rigorous logical rebuttals. In this process, the teacher plays the role of "referee" and "mentor," guiding students to discover the mechanical nature or value deviation in AI logic, thereby clarifying fallacies and deepening theoretical cognition in the "human-machine confrontation," cultivating students' critical thinking and dialectical thinking abilities.

(3) Intelligent Push of Personalized Learning Paths:

After class, the AI teaching assistant generates personalized learning diagnostic reports based on students' performance in classroom interactions and homework data. Addressing a student's misunderstanding of a certain theoretical difficulty (such as "Theory of Surplus Value"), AI automatically generates customized micro-course videos, expanded reading materials, and self-test exercises, realizing precise irrigation and closed-loop consolidation of theoretical learning.

3.2. Practical Teaching Scenarios: Immersive Experience and Emotional Resonance of Virtual-Real Twinning

Practical teaching is key to Civics Courses, aiming to solve the problems of "emotion" and "will." Addressing the issues of limited realistic practice resources and organizational difficulties, Generative AI achieves a "truly immersive" teaching reconstruction by building high-fidelity virtual scenarios.

(1) "Holographic Restoration" of Historical Contexts and Role Playing:

Using text-to-video technologies like Sora and Virtual Reality (VR) technology to reconstruct the scenes of major historical events (such as the First National Congress of the CPC, the Long March crossing snowy mountains and grasslands). Students enter virtual scenarios through Avatars (digital doubles) to play historical figures or ordinary people. AI-driven NPCs (Non-Player Characters) possess affective computing and natural dialogue capabilities, enabling open interaction with students. For instance, if a student falls behind due to a decision-making error in the "Long March" scenario, an NPC comrade will show anxiety and offer encouragement. This immersive role experience transforms students from "bystanders" to "participants," deeply realizing the revolutionary spirit in emotional agitation and achieving embodied identification with values [4].

(2) Social Conflict Simulation and Virtual Decision-Making Drills:

Civics Courses must not only review history but also observe reality. Using AI to construct complex social governance simulation scenarios (such as "interest coordination in the renovation of old communities," "emergency response to public health emergencies"). Students play grassroots cadres in virtual communities, facing various emergencies and mass appeals generated by AI (which simulates the reactions of different interest groups). Students need to apply the rule of law thinking and mass line methods learned in Civics Courses to make decisions and communicate. The system will deduce and display different social consequences based on students' decisions. This virtual drill with extremely low "trial and error" costs effectively improves students' ability to apply theories to solve practical problems.

(3) AIGC Co-creation Practice of Red Culture:

Encouraging students to use Generative AI tools to create Red cultural products. For example, using AI painting tools to draw portraits of revolutionary martyrs, using AI music generation tools to compose anthems of the new era, and using AI writing tools to create scripts for Red micro-movies. During the creation process, teachers guide students to control and optimize the political and artistic nature of AI-generated materials. This "Human-Machine Synergistic Creation" not only stimulates students' creativity but also deepens their understanding and love of mainstream ideology through "learning by doing."

3.3. Social Service Scenarios: Data-Driven Social Insight and Intelligent Decision-Making

Social service is an extension of Civics Courses, aiming to solve the problem of "acting." Generative AI empowers Civics Courses to step out of the campus and serve society, connecting the "small classroom" with the "big society."

(1) Big Data-Based Social Public Opinion Analysis and Guidance:

In the social investigation segment, students use AI tools to conduct sentiment analysis and viewpoint clustering on massive comment data regarding internet hot events, quickly capturing the "barometer" of social mentality. Teachers guide students to look through data appearances, use Marxist standpoints and methods to analyze social contradictions and interest demands behind public opinion, and write high-quality investigation reports or online commentary articles to actively speak out in cyberspace and guide public opinion with positive energy.

(2) Intelligent Scheme Design for Rural Revitalization and Community Governance:

Combined with national strategies like the "High-Quality Development Project for Hundreds of Counties, Thousands of Towns, and Myriads of Villages," organize students to go deep into the grassroots. Using various generative capabilities of AI, design cultural tourism promotion copy for villages, generate agricultural product packaging designs, and plan village appearance renovation schemes. Students transform the "people-centered" development philosophy learned in Civics Courses into concrete actions serving the masses, while AI acts as a powerful "external brain" to make up for students' lack of professional skills, greatly improving the efficiency and achievement transformation rate of social services.

4. Role Reshaping: Functional Re-engineering of Teacher and Student Subjects under Human-Machine Synergy

The reconstruction of the teaching model inevitably accompanies the transformation of the roles of teaching subjects. In the new ecosystem of human-machine synergy, neither teachers nor students are defined traditionally; instead, they achieve role re-engineering through interaction with AI.

4.1. Teachers: From "Knowledge Porters" to "Wisdom Designers" and "Value Gatekeepers"

As Generative AI surpasses humans in knowledge retrieval and content generation capabilities, the teacher's status as a

"knowledge monopolist" is thoroughly broken. The core competitiveness of teachers shifts to higher-order fields that AI cannot replace.

"Architects" of Teaching Scenarios: The main energy of teachers is no longer writing lesson plans but designing teaching scenarios, writing Prompts, and training exclusive teaching models. Teachers need strong curriculum design capabilities to translate teaching objectives into task instructions that AI can understand and execute, constructing a logically rigorous and experience-rich teaching flow.

"Concertmasters" of Human-Machine Interaction: In the classroom, teachers need to flexibly control human-machine interaction, introducing AI resources at the right time and correcting deviations in time when AI experiences "hallucinations." Teachers are like conductors of a symphony orchestra, coordinating the relationship between students, AI, and the environment to ensure the fluency and efficiency of the teaching rhythm.

"Gatekeepers" of the Value Soul: This is the most fundamental duty of a teacher. Facing massive information generated by AI, teachers must possess keen political discernment and value judgment. On key issues involving political direction and ideological security, teachers must play the role of a "stabilizer," strictly auditing and guiding values for AI-generated content to ensure that the political background of Civics Courses does not fade or distort [5].

4.2. Students: From "Passive Recipients" to "Human-Machine Collaborators" and "Critical Thinkers"

Students are no longer containers waiting to be filled but learning subjects with super assistants.

Active Knowledge Constructors: Students use AI tools to actively explore the boundaries of knowledge, constructing their own knowledge systems by asking and questioning AI. The learning process shifts from "listening" to "dialogue" and "inquiry."

Innovators in Human-Machine Synergy: Students learn to use AI to amplify their creativity and complete complex tasks that were difficult to complete independently in the past (such as making videos and analyzing big data). The focus is on cultivating "AIQ," the ability to master and use artificial intelligence to solve problems.

Rational Critical Thinkers: Facing "specious" answers generated by AI, students must maintain high vigilance and independent thinking. Civics teaching should focus on cultivating students' critical thinking, enabling them not to superstitiously believe in algorithms or blindly follow technology, but to learn to establish human subjectivity and value dignity in human-machine gaming.

5. Risk Regulation: Ethical Challenges and Governance Paths of Generative AI Integration into Civics Courses

Despite the broad prospects, Generative AI, as an emerging technology, brings non-negligible risks to Civics Courses, which have highly ideological attributes, due to its "black box" nature, data dependency, and algorithmic unexplainability.

5.1. Major Risks and Challenges

Algorithmic Bias and Ideological Infiltration: Currently, mainstream Generative AI large models are mostly trained

based on Western corpora, and their underlying logic may embed Western values and ideological biases. Direct application to Civics teaching may lead to implicit infiltration of erroneous trends such as historical nihilism and neoliberalism, eroding students' identification with mainstream values [6].

"Machine Hallucination" and Knowledge Misleading: Generative AI exhibits the phenomenon of "solemnly talking nonsense," potentially fabricating false historical facts or erroneous theoretical citations. For students lacking discernment, this misleading is fatal, seriously damaging the scientific nature and seriousness of Civics Courses.

Technological Dependence and Loss of Subjectivity: Over-reliance on AI may lead to mental laziness in teachers and students. Teachers may become "operators" clicking mice, and students may become "digital giant infants" fed by algorithms. Real emotional communication between people is blocked by technology, and the vitality and warmth of education are lost.

5.2. Governance Paths and Response Strategies

(1) **Constructing Independent and Controllable Vertical Large Models for Civics:**

Universities should unite with research institutes and technology enterprises to develop proprietary large models for Civics education, relying on the national education digitization strategy. Establish high-quality Red corpora, using Marxist theory, the spiritual pedigree of Chinese Communists, and excellent traditional Chinese culture as core training data to ensure the purity and political security of AI-generated "genes" from the source.

(2) **Establishing a "Human-in-the-Loop" Value Alignment Mechanism:**

Introducing Reinforcement Learning from Human Feedback (RLHF) technology, organizing famous Civics teachers and experts to participate in model fine-tuning and optimization. Through continuous scoring, correction, and feedback on AI-generated content, Socialist Core Values are embedded into the reward function of the algorithm, enabling AI to continuously "learn" and "understand" China's political discourse system, achieving the alignment of technological logic and political logic.

(3) **Formulating Strict Ethical Norms for AI Teaching Applications:**

Issuing "Guidelines for the Application of Generative AI in University Civics Courses," clarifying the "red lines" and "bottom lines" for AI use. Stipulating that major political principle issues must be based on central documents and authoritative textbooks, with AI-generated content serving only as a reference. Establishing a labeling system and manual review system for AI-generated content to ensure accuracy. At the same time, strengthening digital ethics education for teachers and students to enhance their awareness and ability to prevent algorithmic risks.

6. Conclusion

Moving from "Technical Assistance" to "Human-Machine Synergy" is an inevitable trend in the reform of university Civics teaching in the AI era. This transformation is not only an upgrade of teaching means but also a reshaping of the educational ecosystem. Generative AI, with its powerful empowering potential, depicts a new picture of Civics

teaching with vivid scenarios, deep interactions, and precise personalization.

However, technology is always a means, and educating people is the end. In the process of promoting human-machine synergy, we must always adhere to the principle of "people-oriented" and stick to the original intention of "fostering character and civic virtue" in Civics Courses. We must boldly embrace technology and actively explore innovative "AI + Civics" models; at the same time, we must keep a clear head and avoid the risks of technological alienation through institutional norms and subjective consciousness. Only in this way can we truly harness Generative AI, this "key variable," and transform it into the "maximum increment" for promoting the high-quality development of Civics Courses in the new era, cultivating newcomers of the era capable of shouldering the heavy responsibility of national rejuvenation.

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