

# The Inner Logic and Practical Approach of Metaverse Energizing Curriculum Ideological and Political Education

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## ABSTRACT

Traditional curriculum ideological and political education is facing a long-term challenge of "centrifugal" dilemma. Based on clarifying the current dilemma of curriculum ideological and political education, this article analyzes the internal logic of the metaverse energizing curriculum ideological and political education in the new era, and proposes that the data analysis technology of the metaverse promotes the content of curriculum ideological and political education to be more "personalized and integrated", immersive interactive technology promotes the ideological and political education activities in courses to be more "memorable and impressive", while digital twin technology promotes the evaluation of curriculum ideological and political education to be more "precise and sustainable". It is necessary to explore the practical path of "metaverse plus curriculum ideological and political education" around the content, educational activities, and educational evaluation of ideological and political education in the metaverse scene, and fully leverage the technical effectiveness of the metaverse empowering curriculum ideological and political education, so as to achieve breakthroughs and innovations in ideological and political education in the digital age curriculum.

**Keywords:** Metaverse, Curriculum ideological and political education, Embodied cognition.

## 1. INTRODUCTION

The metaverse is a significant leap forward in the form of human civilization and a profound transformation of technological aggregates. As a phoenix like innovative practice, the metaverse is having a disruptive impact on the transformation of educational forms, concepts, and methods. Since 2023, the domestic metaverse policy has continued to be implemented, and "metaverse + education" has become a strong signal of accelerating innovation in the current education field. According to incomplete statistics from the xMeta Alliance, as of February 2023, a total of 71 colleges and universities in China have established a metaverse field, including 59 undergraduate institutions and 12 junior colleges. The metaverse field is laid out mainly through the establishment of metaverse majors, metaverse series courses, and the creation of metaverse platforms (metaverse research laboratories, metaverse training platforms,

metaverse innovation display platforms, and metaverse campus systems), etc. However, among the numerous studies on the metaverse + education, there are not many studies that involve the connection between the metaverse and curriculum ideological and political construction, which also means that the metaverse has not been deeply cultivated and subdivided in the field of the construction of ideology and politics in courses. Therefore, this study attempts to deeply analyze the inherent logic of the metaverse energizing curriculum ideological and political education in the new era, and then systematically propose a systematic path to achieve "metaverse + curriculum ideological and political education", aiming to provide theoretical support and reference for the implementation and innovation of ideology and politics in courses in the digital era, and attempt to outline the future prospects of the construction of ideology and politics in courses under the educational metaverse.

## **2. THE INNER LOGIC OF METAVERSE ENERGIZING IDEOLOGY AND POLITICS IN COURSES**

In 1992, American author Neal Stephenson coined the term "Metaverse" in the science fiction novel "Snow Crash". At present, there is no unified and clear definition of the metaverse in the academic community, and the metaverse is still a constantly evolving concept.

### **2.1 Clarification of the Metaverse Connotation**

From existing research, it can be seen that people's understanding of the metaverse has mainly formed five representative views, namely "Web3.0 technology view", "ultimate game view", "virtual reality view", "virtual world view", and "virtual reality fusion view". In summary, the metaverse is the 3.0 version of the Internet, a decentralized next-generation Internet. With the support of a new generation of information technology represented by artificial intelligence, the metaverse has entered the advanced stage of the Internet and is highly likely to become the endpoint of its development. As a disruptive innovative practice, the metaverse is both a digital space and a virtual space. The metaverse includes both digital space generated by computer technology and virtual space represented through digital space, which can be perceived through visual, tactile, and other means. Moreover, the metaverse is not just an independent and parallel virtual space, its significance and value lie more in its interaction with the real world, empowering development in the real world through interaction, and improving people's real-life experiences in various aspects of material life. Therefore, fundamentally speaking, the metaverse is a hybrid space of virtual and real fusion, in which humans can live, entertain, and socialize in a digital identity, seamlessly transitioning between the virtual and real worlds.

It can be seen that the metaverse itself is not a technology, but an idea. The connotation of the metaverse is to absorb the successful achievements of the information revolution (5G/6G), the internet revolution (web 3.0), the artificial intelligence revolution, as well as VR, AR, MR, especially the virtual display technology revolution including game engines, demonstrating the possibility of building a holographic digital world parallel to the traditional physical world to humanity. It perfectly

connects online and offline channels, forming a metaverse ecosystem, and then showcasing a colorful digital world to humanity.

### **2.2 Using Metaverse to Energize Curriculum Ideological and Political Education**

The metaverse is a reflection of real society, an organic combination and high degree of unity between reality and virtuality. Education, as an important component of society, will be greatly subverted and developed in the metaverse. With the increasing popularity of the concept of the metaverse, more and more people are focusing on how the metaverse can be applied to the education industry. For overseas, in Silicon Valley, as a cutting-edge technology benchmark, there are discussions everywhere about "how to use VR to enhance students' learning experience" and "how to hold an immersive virtual graduation ceremony online". In China, economics professor Zhu Jiaming, who had earlier paid attention to the concept of the "metaverse", publicly stated that the field with the greatest potential for the application of the metaverse is education. It can be said that the proposal of the educational metaverse has opened the door to a new world to solve the pain points and difficulties in real education, and has also provided endless imagination space for the exploration of curriculum ideological and political education.

The metaverse has the characteristics of constructing humans and technology through subjective presence, embodied interaction, and humanized empowerment. In practice, two types of learning theories will be fully applied: embodied cognitive theory and situational learning theory. In terms of embodied cognition, with the continuous improvement of the development of metaverse scenes, students have expanded their integration of cognition, body, and environment more richly than before, and can truly achieve "learning by doing" and "feeling through experience", which is a great leap forward. The other is situational learning theory. The previous curriculum ideological and political education needs to focus on real situations, practical situations, and cultural situations, emphasizing where to learn. After the successful development of the metaverse environment, it can play a certain role in compensating and improving previously unsuitable situations. By utilizing the metaverse, students can break through the path dependence of traditional ideological and political education in obtaining knowledge or experience

through description, indoctrination, display, preaching, and other methods. This can promote teachers and students to transform from "information-based presence" to "physical presence", thereby achieving "physical and mental presence" and breaking through the shackles of "physical and mental separation" in curriculum ideological and political education. It can be said that the metaverse provides infinite possibilities for energizing the transformation of curriculum ideological and political education in the new era.

### ***2.3 Metaverse Underlying Technology Enables the Practice of Curriculum Ideological and Political Education***

With the continuous development of virtual reality technology, more interesting and effective practice models of ideology and politics in courses can be explored through the underlying technology of the metaverse.

#### ***2.3.1 Data Analysis Technology Promotes the Content of Curriculum Ideological and Political Education to Be More "Personalized and Integrated"***

The educational metaverse, as an important scene in future education and teaching, bears the key responsibility of creating a panoramic learning space, designing personalized learning content and learning events, etc., which requires precise exploration and analysis of students' data information. Data analysis technology, as one of the key technologies in the educational metaverse, provides a disruptive technological upgrade for improving personalized learning services for students and optimizing their learning behavior. Therefore, the ubiquitous ideological and political education content such as "strengthening the mind and weakening the body" in traditional curriculum ideological and political education will undergo a breakthrough in the field of metaverse data analysis.

For example, multimodal data analysis in the metaverse space can provide a data foundation for personalized design of the content of curriculum ideological and political education. The multimodal data in the metaverse space includes various forms such as text, images, audio, video, etc. These data can collect students' behavior and emotional data in virtual space. The content of curriculum ideological and political education can be achieved through the following three methods:

- Behavioral data analysis: By collecting students' behavioral data in virtual spaces (such as participation, interaction duration, selection preferences, click behavior, etc.), data mining and analysis are conducted to uncover high-dimensional information such as students' learning interests, learning characteristics, and learning levels in ideology and politics in courses, which can be used for personalized design of the content of ideology and politics in courses.
- Emotional data analysis: Through multimedia sensors and artificial intelligence technology, emotional analysis can be conducted on students' recorded video or audio signals to understand their emotional state and cognitive depth, further identifying students' preferences, needs, and difficulties in course ideological and political content, and providing data support for personalized ideological and political teaching content.
- Student feedback collection: In the metaverse space, students can independently choose to provide feedback information such as content, opinions, and suggestions of interest to the system. These feedback data can be statistically analyzed to understand each student's attitude, ideological tendency, reaction speed, etc. towards the course, thereby providing a data foundation for the design and development of personalized teaching content.

Therefore, by collecting, analyzing, and mining data analysis techniques in the metaverse, it is possible to identify and meet the personalized needs of students, directly promoting the improvement of the quality of the content in the curriculum ideological and political education. By making the ideological and political education content more intelligent and personalized, it promotes the integration of students' "body" and "mind", assists in the "integration" of curriculum ideological and political education, and is conducive to the realization of "precise ideology and politics".

#### ***2.3.2 Immersive Interactive Technology Promotes Activities of Curriculum Ideological and Political Education to Become More "Memorable and Impressive"***

Immersive interaction technology is an innovative interaction method that can integrate virtual scenes with reality, providing more vivid,

three-dimensional, and intelligent support for curriculum ideological and political education. If the traditional teaching mode is one-dimensional and the multimedia classroom is two-dimensional, then an immersive classroom built on the underlying technology of VR and 3D interaction in the metaverse will bring curriculum ideological and political education to a multidimensional level, which will inevitably overturn the perception form of teaching activities. In other words, the highly ideological and valuable nature of traditional content of ideology and politics in courses has brought certain limitations to the selection of teaching activities and diverse methods in reality, which can easily fall into the misconception of "emphasizing content over form", thereby affecting the absorption and comprehension of ideological and political content. The innovative interactive methods of metaverse technology can immerse students in virtual scenes and gain emotional and value perception through immersive experiences, which specifically reflected in:

The first is that immersive interaction technology can simulate real scenes and situations, providing educational experiences that utilize single or multiple senses such as visual, auditory, and tactile displays, enabling students to directly participate in the entire process of curriculum ideological and political education and become more integrated into it. For example, in learning the Wangjiaba spirit of "giving up small homes and serving everyone", students can use VR devices to transform into emergency rescue personnel, "driving" a storm-boat to transport rescue supplies to flooded villages, "rescuing" patients, and also avoiding obstacles such as trees from time to time. Immersive ideological and political experience has a three-dimensional and immersive visual experience, which is more impactful and infectious than language and writing. The experience of ideology and politics in courses will be also stronger.

The second is the real time feedback on student status. Immersive interaction technology can collect real-time behavior and emotional data of students in virtual spaces, analyze and provide feedback in real time, and offer customized solutions for students' intentions and difficulties. While ensuring the quality of education, this kind of experience can make students feel that they are being listened to and cared for seriously.

The third is to promote active participation of students. Immersive interactive technology can

break traditional educational models, making activities of curriculum ideological and political education more vivid, interesting, innovative, and showcasing advantages. In an immersive experience, students can more fully unleash their proactive interest and imagination, allowing activities of curriculum ideological and political education to truly "subtly" penetrate their minds and hearts.

### *2.3.3 Digital Twin Technology Promotes a More "Precise and Sustainable" Evaluation of Curriculum Ideological and Political Education*

The crux of the "physical and mental separation" in the evaluation of curriculum ideological and political education is mainly manifested in the "separate physical and mental evaluation" of students, which makes it difficult to have the internal connection between students' body and mind in the evaluation process of curriculum ideological and political education. As is well known, different from pure knowledge, the same teaching content of curriculum ideological and political education triggers vastly different thoughts and emotional experiences among different students, which determines that the evaluation of curriculum ideological and political education cannot be uniform, and the use of unified metrics for the evaluation of curriculum ideological and political education may even appear irrelevant. By utilizing the digital twin technology in the metaverse, a series of data-driven information about students' bodies and minds can be tracked and recorded in the evaluation of ideology and politics in courses. For example, through the simulation model of the metaverse and digital twin technology, timely exploration of students' psychological characteristics and change trajectories in the process of participating in ideological and political content learning can predict, evaluate, and simulate the development trend of students' abilities and literacy, and may even directly determine the crux of future problems, or identify potential problems in the early stage, thereby improving the evaluation effect of ideology and politics in courses, and facilitating large-scale and long-track evaluation of curriculum ideological and political education. Another example, when evaluating curriculum ideological and political education, teachers can respect students' personalized development needs, adopt diversified evaluation models, choose evaluation methods such as practical operations, research reports, and practical projects, and use

digital twins as the evaluation objects to establish a personalized evaluation mechanism for curriculum ideological and political education embedded in different metaverse virtual environments. By effectively utilizing learning and analysis techniques such as posture recognition, facial expression recognition, and emotion recognition, and focusing on dimensions such as embodied interaction, knowledge transfer, and innovative thinking, we comprehensively explore and analyze the multimodal data generated by student users' metaverse avatars after engaging in virtual activities, in order to timely adjust and intervene in the change trajectory of students' "body intelligence" and "mind" reproduced in the metaverse. In addition, digital twin technology has the characteristics of high fidelity, real-time interactivity, virtual and real symbiosis, and scalability. The series of behaviors, ideas, and emotions generated by students' digital twins in the metaverse teaching space can be automatically digitized and recorded. And these digital records are more scientific and accurate than subjective assessments in the real world, and can also reflect the personalized needs of learners in real-time, enhancing the presence of the process of curriculum ideological and political education through evaluation of ideology and politics in courses.

### **3. PRACTICAL APPROACH: THE GENERATION OF THE VISION OF "METAVERSE + IDEOLOGY AND POLITICS IN COURSES"**

The metaverse has important value in achieving embodied learning in the process of curriculum ideological and political education. The integration process of "metaverse + ideology and politics in courses" is also a process of ideological and political education transforming from "detachment" to "embodiment". Based on the above analysis, the integration of "metaverse + online vocational education" can be explored around the content, activities, and evaluation of curriculum ideological and political education in the metaverse scene.

#### ***3.1 Developing Content Standards for Curriculum Ideological and Political Education in the Context of the Metaverse, Returning to the Characteristic of "Physical and Mental Integration"***

The key to generating curriculum ideological and political education content from separation to integration lies in the organic integration of physical action tasks and theoretical learning content in curriculum ideological and political education. In the highly digitized and immersive metaverse space, returning to the "physical and mental integration" characteristic of the content of curriculum ideological and political education will become a breakthrough point and driving force for future curriculum ideological and political education. On the one hand, it is necessary to clear the goal positioning of embodied curriculum ideological and political education in the metaverse scene, clarify the physical and mental development goals achieved by students in participating in the learning of ideology and politics in courses of the metaverse at the emotional, literacy, and value levels, and based on the hierarchical structure of the goals of curriculum ideological and political education, combined with the characteristics and elements of virtual activities in the metaverse scene, systematically construct a goal system of curriculum ideological and political education in the metaverse scene. On the other hand, it is necessary to develop content standards for embodied curriculum ideological and political education in metaverse scenarios. Due to the virtual world supported by the metaverse, curriculum ideological and political education is no longer limited by time, geographical location, and resource endowment. Therefore, this technological convenience makes the content of curriculum ideological and political education in the metaverse scene extremely broad for participation. At the same time, in order to avoid deviating from the goals of ideological and political education in virtual courses caused by excessively granting designers the freedom to develop content, it is necessary to develop content standards for embodied curriculum ideological and political education in metaverse scenes, that is, to systematically demonstrate and develop the basic principles and knowledge system design standards of curriculum ideological and political education in the metaverse scene based on the goal system of embodied curriculum ideological and political

education in metaverse scenes, in order to ensure the embodiment, practicality, scientificity, and safety of the content design of ideological and political education in the metaverse space.

### ***3.2 Exploring a Method of Curriculum Ideological and Political Education Based on the Underlying Technology of the Metaverse, and Leveraging the Advantages of "Embodied Learning"***

With the continuous development of virtual reality technology, more interesting and effective teaching models of ideology and politics in courses can be explored through the underlying technology of the metaverse. The advantage of metaverse technology lies in its ability to effectively construct a personalized "embodied learning" space for curriculum ideological and political education, providing technical support for "ternary interaction" for embodied learning: a technological platform that couples physical, physiological, and psychological processes, thereby promoting the spiral upward process of "action in learning → reflection in action → practice in reflection → construction in practice" for embodied learning in ideology and politics in courses. However, at the current level of low-level technology in the metaverse, it is still difficult to achieve "complete body form" digital activities in the metaverse. The embodied education supported by the metaverse is still in the exploration and development stage, and the specialized embodied education methods for curriculum ideological and political education are still in the embryonic stage. Therefore, it is necessary to build a reasonable technology application plan based on the existing metaverse technology layout, and leverage the "embodied learning" advantages of metaverse technology. Firstly, in the educational metaverse, there is a must to adhere to embodied cognitive thinking, embodied design activities of curriculum ideological and political education, carry out curriculum ideological and political education aimed at students' "physical and mental integration", and arrange technical observation points for curriculum ideological and political education in advance. Secondly, it is a necessity to improve the platform construction, system development, virtual and real integration, and autonomous evolution of the metaverse learning system of ideology and politics in courses, providing technical support for the implementation of embodied curriculum ideological and political education in the metaverse

space. Finally, there is also a must to highlight the innovative characteristics of embodied practice in the metaverse scene combining the technological characteristics of the metaverse. It is necessary to fully utilize the technological efficacy of the underlying technologies of the metaverse, integrating artificial intelligence, digital twins, somatosensory technology, virtual reality, immersive interaction, and other technologies into the process of ideological and political education in the curriculum, and emphasize the improvement of students' vivid experiences of physical participation and the promotion of dynamic generation of value and significance.

### ***3.3 Establishing an Evaluation Mechanism of Curriculum Ideological and Political Education Embedded in the Metaverse Scene, and Mapping the Concept of "Embodied Evaluation"***

The core of curriculum ideological and political education is "student-centered", and the evaluation of curriculum ideological and political education in the metaverse field urgently needs to achieve a relative balance between knowledge rationality and value rationality. In the metaverse, data dashboards, full life circle query systems, and virtual real mapping evaluation representations are the main ways to present learners' evaluation information. Building an evaluation method system based on blockchain technology can achieve the goals of leaving traces, traceability, openness, transparency, and non-forgery in the entire process of learner evaluation. Therefore, when evaluating curriculum ideological and political education, it is necessary to respect students' personalized development needs, adopt diversified evaluation models, select evaluation methods such as practical operations, research reports, and practical projects, and establish a personalized evaluation mechanism for curriculum ideological and political education embedded in different metaverse virtual scenes, with the digital twin as the evaluation object.

A personalized evaluation mechanism for curriculum ideological and political education should be established based on the evaluation object of the digital twin and embedded into different metaverse virtual scenes. In the evaluation process of ideological and political education in embodied courses, attention should be paid to the mutual relationship between students' bodies and minds, and effective application of learning and analysis techniques such as posture, facial

expressions, and emotion recognition should be carried out. Evaluation should be conducted around aspects such as embodied interaction, knowledge transfer, and innovative thinking, comprehensively exploring and analyzing the multimodal data generated by students after participating in virtual activities, and reveal the changing trajectory of students' "body intelligence" and "mind intelligence" in the process of curriculum ideological and political education from the perspective of metaverse incarnation.

#### 4. CONCLUSION

The policy report "A Whole New World: Education Meets the Metaverse" released by the Brookings Institution in the United States points out that the digital concept of the metaverse is increasingly approaching. Education is an important application field of the metaverse, and the educational metaverse will also enter people's lives in the next 5 to 10 years. With the deep integration and practical application of the metaverse and education, the metaverse will inevitably provide a new innovative field for the field of curriculum ideological and political education. Of course, before the metaverse can be integrated into the real world, daily life, and education, it must also face many doubts and challenges from metaverse technology and metaverse ethics. Therefore, while actively embracing the development trend of the metaverse, curriculum ideological and political education needs to adhere to the original intention and responsibility of curriculum ideological and political education, actively explore innovative ways of personalized curriculum ideological and political education, shoulder the responsibility of cultivating students' emotional cultivation and value integrity in the new era, and continuously relearn and start again.

#### AUTHORS' CONTRIBUTIONS

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