

Metaverse-Enhanced Ideological and Political Education: A Case of Emergency Management Course in Adult Higher Education

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Metaverse-enabled ideological and political education is an emerging yet exploratory area in educational research, hindered by the lack of fully integrated, connected learning spaces. This study constructs a metaverse-based teaching framework with four core elements: demand orientation, spatial reconstruction, diversified interaction, evaluation and feedback. Using the Open University's "Emergency Management" course as a case study, specifically the "Community Emergency Evacuation Simulation", the research addresses adult learners' needs to design, implement, and evaluate a full teaching process in the metaverse context. The study explores how the metaverse reshapes learning spaces and facilitates diversified interactions, providing evidence of its effectiveness in ideological and political education. The findings offer theoretical and practical insights for designing metaverse-enabled teaching environments and innovating hybrid online-offline teaching models.

Keywords: education in the metaverse, ideological and political education, adult higher education, emergency management course

Introduction

The rapid development of metaverse technology has introduced unprecedented opportunities for education, including the integration of ideological and political education into immersive, virtual environments. As an emerging yet exploratory area in educational research, metaverse-enabled ideological and political education holds significant potential for addressing traditional challenges in learner engagement and knowledge transfer. However, the lack of fully integrated, connected learning spaces has limited its practical implementation and widespread adoption (Zhao, Sun, & Liu, 2023). This study seeks to address these gaps by proposing a metaverse-based teaching framework that reimagines the design, implementation, and evaluation of ideological and political education, specifically in adult higher education contexts.

Ideological and political education plays a vital role in shaping values, fostering civic responsibility, and promoting emotional and cognitive growth among learners (Li & Zhang, 2022). However, traditional methods

Acknowledgment: This work was supported by Shanghai Higher Education Association (2QZD2406) and Chinese Adult Education Association (2024-SJYB-077S).

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often fail to fully engage adult learners, whose diverse needs and practical challenges—such as time constraints and fragmented learning environments—necessitate innovative approaches (Wang, 2021). The metaverse, with its capacity for spatial reconstruction, immersive interaction, and hybrid learning experiences, offers a novel solution. By combining virtual and physical learning spaces, metaverse-enabled education creates opportunities for gamified, experiential learning that integrates ideological and political elements in subtle and engaging ways (Chen, Li, & Zhang, 2023).

This study uses the Open University’s “Emergency Management” course, focusing on the “Community Emergency Evacuation Simulation” as a case study to examine the application of metaverse-enabled ideological and political education. A teaching framework is developed based on four core elements: demand orientation, spatial reconstruction, diversified interaction, and evaluation and feedback. The research explores the potential of the metaverse to reshape learning environments and enhance adult learners’ engagement, knowledge retention, and value internalization. By addressing the unique needs of adult learners and leveraging the immersive capabilities of the metaverse, this study contributes to the theoretical and practical understanding of how emerging technologies can transform ideological and political education. It provides actionable insights for educators and policymakers seeking to design innovative, hybrid teaching models that bridge spatial and cognitive divides.

Literature Review

The educational metaverse, characterized by its interactivity, immersion, and intelligence, offers transformative potential for enhancing traditional teaching methods, particularly in fostering engagement, creativity, and experiential learning (Zhang, Li, Chen, & Wang, 2022; Li & Zhang 2022). Compared to conventional online education, the metaverse provides contextualized and immersive scenarios that improve interaction quality, personalized learning, and intelligent assessments. This makes it especially promising for ideological and political education (IPE), which seeks to integrate knowledge acquisition, emotional resonance, and value formation into the learning process (Chen, Zhang, Li, & Zhao, 2021; Wang, Liu, Zhang, & Chen, 2022). Frameworks like the “scenario-body-mind” model and the “cognitive-affective-behavioral” framework have shown potential in creating engaging and meaningful learning experiences that align with IPE objectives. However, significant challenges remain, including the difficulty of evaluating experiential and affective learning outcomes and the long-term effectiveness of immersive scenarios in shaping ideological and behavioral change (Liu, Guo, & Samu, 2024; Zhang, Chen, & Liu, 2023).

Despite these advancements, the application of metaverse technologies in IPE is still in its infancy, with several critical research gaps. First, empirical studies on metaverse-enabled IPE, particularly in adult higher education, remain limited. While the metaverse has been widely adopted in fields like medical and engineering education, there is insufficient evidence on its efficacy in promoting value formation and critical thinking in IPE contexts. Second, current evaluation models inadequately capture the affective and experiential dimensions of IPE, leaving questions about the long-term impact of metaverse-enabled teaching unanswered. Third, practical barriers such as technological immaturity, high costs, and insufficient infrastructure—combined with the digital divide—pose significant challenges for scaling metaverse-enabled IPE across diverse educational institutions (Li & Zhang, 2022; Wang et al., 2022). Lastly, while immersive environments foster engagement, they often lack strategies for integrating critical thinking and reflective practices, which are essential for deeper ideological learning and value internalization.

To address these gaps, this study investigates how metaverse-enabled teaching frameworks can enhance engagement, emotional resonance, and value formation in IPE, particularly for adult learners. It examines the effects of immersive scenarios on learners' cognitive, emotional, and behavioral outcomes while identifying strategies to overcome technological and institutional barriers to adoption. Additionally, the research explores how pedagogical frameworks can balance immersive learning with critical thinking and reflective practices. Specifically, this study seeks to answer the following questions: (1) How can metaverse-enabled IPE frameworks be designed to engage adult learners and facilitate value formation? (2) What are the cognitive, affective, and behavioral outcomes of learners in metaverse-enabled IPE? (3) How can practical barriers, such as technological limitations and high costs, be mitigated to promote widespread adoption of metaverse technologies? (4) What strategies can integrate critical thinking and reflective learning into metaverse-based IPE frameworks? (5) What is the long-term impact of metaverse-enabled IPE on learners' ideological understanding and behavioral change?

By addressing these questions, this study contributes to the theoretical and practical understanding of metaverse-enabled IPE, providing insights into how immersive technologies can reshape educational environments to meet the unique needs of adult learners while advancing the goals of ideological and political education.

Metaverse-based Teaching Framework

This study selects the “Emergency Management” course offered by the Open University as a case study. The “Emergency Management” course is a mandatory module for students majoring in emergency management, public administration, and social work in Shanghai Open University. It adheres to the overarching concept of national security, prioritizes the safety and health of people, and focuses on emergency management processes, mechanisms, and methods.

Guided by an analysis of learner needs and the educational goal of fostering moral character, the study reconstructs IPE scenarios within the metaverse space, adopts diversified interactive teaching strategies, and explores a metaverse-enabled evaluation system for IPE. The teaching case selected for this study is based on a structural framework encompassing four core elements—“demand orientation, spatial reconstruction, diversified interaction, and evaluation feedback”; the teaching practice integrates metaverse technologies to empower the ideological and political education (IPE) of adult higher education courses. The aim is to fully harness the empowering potential of the metaverse, systematically enhance IPE outcomes, and promote comprehensive reforms in IPE teaching.

Demand Orientation of Adult Learners

In the spring semester of 2024, the “Emergency Management” course team conducted a survey of 351 adult learners enrolled in the course. The results revealed four significant divides in the demographic structure of the learners (Table 1):

1. Age divide—A wide range of age groups, leading to varying learning preferences and needs.
2. Occupational divide—Differences in job types, particularly between those in institutionalized professions and non-institutionalized roles.
3. Economic divide—Variations in income levels, affecting access to resources and learning opportunities.
4. System divide—Disparities arising from the household registration (hukou) system, which impacts learners' social and educational opportunities.

These divides erode adult learners' confidence in their learning abilities and the value of their education. Based on this survey and interview findings, the teaching challenges and pain points of the "Emergency Management" course were summarized as follows:

1. Work-life-study conflict: Adult learners face pronounced conflicts between work, personal life, and study, resulting in low focus and engagement in coursework.

2. Diverse learner profiles: The heterogeneity of learner types makes it difficult to foster effective classroom interaction and engagement.

3. Resistance to value change: Adult learners often have deeply ingrained habits, emotional attachments, and cognitive rigidity, making it challenging to shift their value systems and beliefs. Additionally, their sense of self-efficacy is generally low.

4. Social prejudice and self-perception: Society often views adult education degrees as "remedial" compared to full-time degrees, contributing to biases against such qualifications.

Although adult learners possess rich work and life experiences, these challenges highlight the unique difficulties in engaging them effectively in ideological and political education within the "Emergency Management" course.

Table 1

The Characteristics of the "Emergency Management" Students Sample

Variable	Percentage	Variable	Percentage
Gender		Cities in other provinces	24.81
Female	45.11	Rural areas in other provinces	42.11
Male	54.89	Others	4.14
Age		Occupation	
Average	31.06	Public Security/Emergency Management/Security	6.58
Monthly income (pre-tax)		Fire service	6.76
2,999 and below	12.03	Community committee	7.95
3,000-4,999	10.15	Property management	7.78
5,000-7,999	27.07	Street-level basic work	11.15
8,000-11,999	30.83	Market/sales/business/	21.12
12,000-19,999	16.17	Procurement/product/operations	5.64
20,000-39,999	2.63	Administration/human resources	4.89
40,000-59,999	1	Self-employed business owner	4.14
60,000 and above	1.13	Corporate manager	10.03
Household registration		Service industry personnel	6.02
Local non-agricultura	23.31	Technical development/engineer	5.40
Local agricultural	5.64	Freelancer	2.54

Spatial Reconstruction: Activating Ideological and Political Elements With "Metaverse + ClassIn"

The "Emergency Management" course team centered on "simulation drills" to create metaverse-based scenarios that integrate ideological and political (IPE) elements, addressing common challenges among adult learners such as prioritizing practice over theory, assessments over reflection, and technical skills over holistic competence. These scenarios were designed to overcome low engagement and focus among learners. Given the technical and financial constraints of metaverse technology, the team selected the course's practical module, "Community Emergency Evacuation Drill for Sudden Incidents", as a prototype for developing a metaverse environment that supports blended online and offline teaching. Using Tsinghua's ChatGLM for AI development and Unity3D for scene rendering, the team created a metaverse-enabled teaching experience.

Two immersive scenarios were developed, modeled on a high-rise fire incident: (1) Spring Community High-Rise Fire Accident, (2) Emergency Evacuation of Trapped Residents. To enhance student engagement and focus, three adjustable background settings—rainy weather, rush hour, and traffic congestion—were incorporated into the simulations. Students experienced the fire scenario immersively, analyzing disaster-related information to identify risk factors, assess vulnerabilities, determine safe distances, and conduct risk identification and situational assessments.

To reinforce ideological and political education, the high-rise fire metaverse scenario incorporated IPE elements into the virtual environment (Figure 1). For instance, outdoor signage in Spring Community displayed slogans such as “Party Members Are Always Nearby”. Additionally, outdoor digital screens highlighted the theme of the 16th National Disaster Prevention and Mitigation Day: “Safety for All, Emergency Preparedness for Everyone—Enhancing Grassroots Disaster Prevention and Risk Avoidance Capabilities”. In the evacuation scenario, the complexity of the drill was heightened by the inclusion of seven types of disaster-affected individuals: Emotionally Distressed Residents; A 98-Year-Old Bedridden Senior Citizen; A Pregnant Woman Near Labor; Injured Residents; A Rumor Spreader; Pet Owners; Residents in Urgent Need of Food and Water. This approach encouraged students to cultivate problem-oriented awareness and deepened their understanding of IPE principles within emergency management practices.

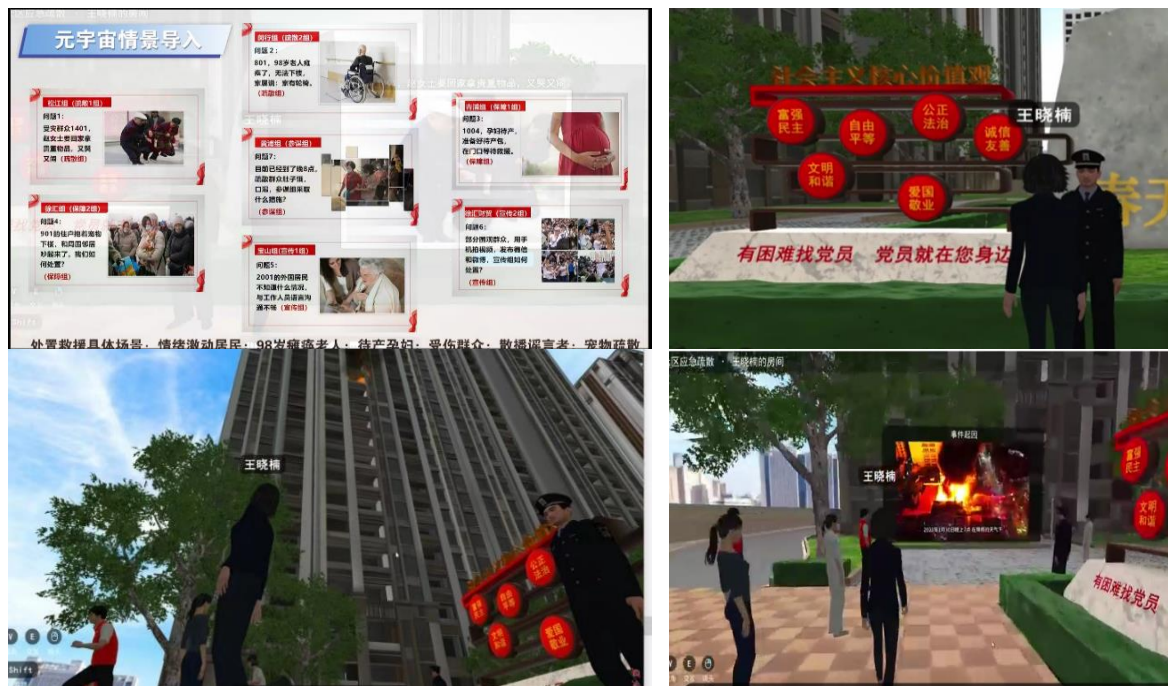


Figure 1. Integration of ideological and political elements into metaverse scenarios.

The integration of “Metaverse + ClassIn” redefines traditional ideological and political education (IPE) models by reconstructing spatial dynamics to activate IPE elements and enhance educational outcomes. The metaverse’s interactive nature enriches learning experiences by freeing students from the constraints of real-world roles (Figure 2). Within the virtual space, students seamlessly navigate between real and virtual identities to conduct situational assessments, allocate resources, mobilize communities, coordinate operations, and guide public opinion. Through immersive metaverse drills, these students played roles that closely aligned with their

real-life professions. By engaging in role-switching and perspective-taking, they not only applied theoretical knowledge to practice but also developed a heightened sense of responsibility, baseline thinking, risk awareness, and systematic reasoning.



Figure 2. The integration of “Metaverse + ClassIn” redefines IPE models.

Diversified Interaction: “Diverse + Synchronous” Teaching to Foster Emotional Resonance

The “Emergency Management” course is offered simultaneously across multiple branches of the Open University, requiring coordinated teaching efforts between the central and branch campuses to ensure consistent teaching quality. Given the large, diverse, and widely distributed cohort of adult learners—many of whom work in grassroots positions—it is challenging for all students to participate in metaverse simulations at the same time and place. This necessitates the design of appropriate teaching organization strategies to address these complexities. The course team adopted the “Diverse + Synchronous” model.

In this model, multiple educators collaboratively organize teaching activities, combining “offline centralized” and “online distributed” formats. Learners from different branches, locations, and spaces are connected through this approach, breaking the isolation of separate classrooms. By synchronizing learning activities across campuses, a hybrid discussion space is created, seamlessly integrating online and offline environments. This “Diverse + Synchronous” strategy enables dispersed and diverse adult learners to engage in real-time, collaborative discussions, fostering interaction and emotional resonance in both virtual and physical settings.

The “Diverse + Synchronous” interactive teaching approach not only transforms traditional teaching methods but also significantly enhances student engagement, focus, interactivity, and creativity. More importantly, this approach fosters in-depth discussions, brainstorming sessions, and collective problem-solving, thereby strengthening teacher-student, student-student, and teacher-teacher interactions. Through active participation in discussions and presentations, core values such as “Party Leadership”, “Volunteerism”, and the “People-Centered Principle” naturally emerge and resonate with learners. This emotional engagement ultimately deepens their value recognition, reinforcing the ideological and political education goals of the course.

Evaluation and Feedback

To measure the teaching effectiveness of the “Emergency Management” course, the course team developed a comprehensive evaluation system that collects data on teaching outcomes from multiple perspectives. This system includes pre- and post-class surveys, in-class tests, as well as tools such as visualized word clouds to evaluate the achievement of knowledge, ability, emotional, and value-oriented objectives.

Pre- and post-class surveys. To promptly evaluate the achievement of students’ “Knowledge—Ability—Emotion—Values” goals, the course team designed pre- and post-class surveys. These surveys measured factors such as knowledge recognition, ability recognition, and value recognition, as well as classroom engagement,

focus, and interaction rates. Notably, engagement, focus, and interaction rates served as indirect indicators of the achievement of emotional goals.

The pre- and post-class survey variables were operationalized into measurement items (Table 2), specifically targeting the course’s knowledge, ability, emotional, and value-oriented goals. The survey responses were structured on a five-point Likert scale, with options ranging from “Strongly Disagree”, “Disagree”, “Neutral”, “Somewhat Agree”, to “Strongly Agree”. Each option was assigned a score from one to five.

By comparing pre- and post-class survey results, the course team could quantify the progress and effectiveness of the teaching approach. This provided insights into how well the course helped students achieve its knowledge, emotional, ability, and value-related objectives, as well as how effectively it fostered engagement, focus, and interaction, which reflect emotional resonance and alignment with course goals.

Table 2

Operationalized Measurement Items for Variables

Variable	Pre-class measurement item	Post-class measurement item
Knowledge recognition	I understand the knowledge I have previously learned.	I evaluate my knowledge mastery and task completion.
Engagement	I allocate my study time reasonably to ensure on-time class attendance and group task completion.	I feel a sense of accomplishment based on my effort during the course.
Focus	I try to find a suitable, distraction-free study environment.	During learning, I do not miss key points because of thinking about unrelated matters.
Interaction rate	I enjoy interacting with others when participating in pre-class group roles and case preparation.	I actively interact with others during the course, sharing my opinions with them.
Ability recognition	I feel I already possess basic emergency management skills and can apply them in practice.	I feel that my knowledge and professional skills in emergency management have improved.
Value recognition	I believe the value concepts of emergency management are significant in practice.	I feel I have gained an understanding of the people-centered value concept.

The course team distributed 380 questionnaires to students enrolled in the Spring 2024 “Emergency Management” course, with 351 valid responses collected. The pre- and post-course survey results (Figure 3) indicated significant improvements in students’ recognition of course knowledge, abilities, and values.

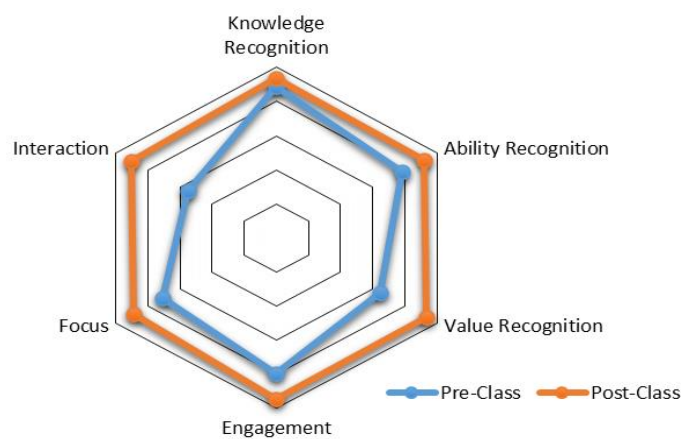


Figure 3. Comparison of data before and after the course.

Word cloud analysis. One of the primary evaluation techniques employed was word cloud analysis. During the review and summary phase, the course team utilized the metaverse’s real-time analysis capabilities to analyze

students' spoken data and generate high-frequency word cloud visuals (Figure 4). The most frequently occurring words included: evacuation, residents, assurance, publicity, fire, information, people, and safety, listed in descending order of frequency. By aligning the word cloud insights with the teaching goals, the course team was able to effectively assess the degree to which the course succeeded in fostering emotional engagement, developing practical competencies, and achieving the ideological and political education objectives.

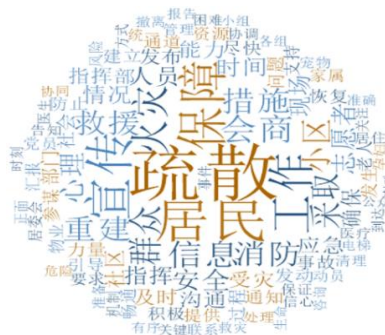


Figure 4. Word cloud of high-frequency words from student discussions.

This semester's teaching feedback indicates that the knowledge, ability, emotional, and value-oriented goals set by the research team were effectively achieved:

1. Knowledge goals: To evaluate students' mastery of emergency management concepts and theories, in-class tests included single-choice and multiple-choice questions. The test results indicated a student accuracy rate of 95%, demonstrating that the students had generally achieved the expected knowledge acquisition targets.

2. Ability goals: Based on word frequency analysis of student discussions, the achievements of ability-oriented goals from highest to lowest were as follows: social mobilization ability 90%, decision-making and command ability 80%, risk assessment and communication ability 70%, resource assurance ability 60%, coordination and linkage ability 50%, situational assessment ability 40%. The last two abilities were relatively weaker, suggesting areas for improvement in future teaching.

3. Emotional and value-oriented goals: Teachers utilized the Metaverse platform to create immersive scenarios, significantly enhancing students' emotional experiences. According to the high-frequency word analysis in Figure 4, terms such as "evacuation", "residents", and "assurance" ranked among the top. This indicates that students displayed a strong "people-centered" emotional attitude, with a clear preference for the value orientation of "putting people and lives first".

Conclusion and Reflection

This study focuses on the Open University's "Emergency Management" course, specifically the "Community Emergency Evacuation Simulation for Residents in Crisis Situations". It proposes a metaverse-enabled teaching framework for ideological and political education, integrating demand orientation, spatial reconstruction, diversified interaction, evaluation and feedback.

Key aspects of the framework include:

1. Demand orientation: Identifying the pain points and challenges faced by adult learners and tailoring strategies to their unique learning characteristics.

2. Spatial reconstruction and interaction: Leveraging metaverse technology to reconstruct teaching spaces and enable diverse, interactive, and immersive learning experiences.

3. Evaluation and feedback: Using tools like word cloud analysis and surveys to assess outcomes and refine the teaching approach.

The study highlights the benefits of immersive metaverse scenarios, which seamlessly integrate ideological and political elements in a gamified manner. This subtle approach heightened student engagement, focus, and emotional involvement, enabling the transformation from “knowledge to ability” and from “emotion to values”.

The metaverse environment also facilitated the creation of interconnected virtual and physical learning communities, bridging spatial barriers. For instance, the “Metaverse + ClassIn” model connected eight Open University branches and 380 students in a shared classroom experience, allowing for real-time interaction with teachers and peers across locations. This hybrid model not only enhanced explicit knowledge transfer but also fostered implicit abilities, emotional exchange, and value internalization.

However, challenges remain. The study encountered technical barriers, such as inadequate platform standardization and limitations in human-machine interaction and scenario rendering, which hindered deeper integration of intelligent technologies. Future research should prioritize overcoming these barriers by standardizing metaverse platforms, enhancing interaction and rendering capabilities, and integrating advanced intelligent technologies. These improvements will further enhance immersive learning experiences and promote the fusion of explicit knowledge, implicit abilities, emotional resonance, and value recognition in ideological and political education.

References

- Chen, X., Zhang, Y., Li, W., & Zhao, H. (2021). Interactive teaching models in metaverse-based education. *Journal of Educational Technology Research*, 34(2), 45-58.
- Chen, X., Li, Y., & Zhang, M. (2023). Exploring virtual learning environments for ideological and political education: The role of immersive technologies. *Journal of Educational Innovation*, 34(2), 45-62.
- Cheng, L., & Chong, K. M. (2024). Metaverse in academia: Redefining higher education’s future. *Applied Mathematics and Nonlinear Sciences*, 9(1). Retrieved from <https://doi.org/10.2478/amns-2024-3037>
- Gündüz, N., & Sincar, M. (2024). Metavethics in higher education institutions: Is the metaverse second forbidden fruit of humanity? *International Journal of Contemporary Educational Research*, 11(2), 186-203. Retrieved from <https://doi.org/10.52380/ijcer.2024.11.2.578>
- Li, F., & Zhang, J. (2022). Ideological and political education in the digital age: Challenges and opportunities. *International Journal of Political Education*, 12(3), 189-204.
- Liu, G., Guo, T., & Samu, O. (2024). Application of immersive media technology in ideological and political theory courses instruction at Shandong vocational colleges. *Journal of Contemporary Educational Research*, 8(5), 187-193.
- Panda, G., Arora, M., Ghoshal, I., Garza-Reyes, J. A., & Kaswan, M. S. (2024). Application of metaverse in higher education: A systematic literature review and bibliometric analysis. *The TQM Journal*. Retrieved from <https://doi.org/10.1108/TQM-08-2024-0279>
- Wang, H. (2021). Adult learning in ideological and political contexts: Insights and strategies. *Adult Education Quarterly*, 71(4), 325-341.
- Wang, Q., Liu, J., Zhang, X., & Chen, R. (2022). Metaverse-enabled ideological education: Opportunities and challenges. *Frontiers in Education Research*, 19(4), 89-103.
- Xu, X. N. (2024). Practical dilemmas and coping strategies of meta-cosmos in helping the high quality development of ideological and political education in colleges and universities. *Applied Mathematics and Nonlinear Sciences*, 9(1). Retrieved from <https://doi.org/10.2478/amns-2024-0570>
- Zhang, J., Li, Y., Chen, Z., & Wang, Q. (2022). Deep learning in the metaverse: Educational implications. *Computers in Education*, 44(1), 34-57.
- Zhang, W., Chen, H., & Liu, Y. (2023). Flow theory and immersive learning in ideological education. *Journal of Immersive Education Research*, 5(2), 98-115.
- Zhao, T., Sun, Q., & Liu, W. (2023). The metaverse in education: Bridging gaps and reimagining learning spaces. *Educational Technology Research and Development*, 71(1), 21-40.