

## Development of Ayutthaya Metaverse Cultural Learning Resources

Suchart Saenpich, Sukhothai Thammathirat Open University, Thailand  
Phisit Nadprasert, Sukhothai Thammathirat Open University, Thailand

The Asian Conference on Education & International Development 2026  
Official Conference Proceedings

### Abstract

This study focuses on the development of Ayutthaya Metaverse cultural learning resources to promote cultural learning through immersive and realistic experiences. The objectives of this research were: (1) to study and design a model of the Ayutthaya Metaverse for educational and cultural learning purposes for the general public, and (2) to develop Ayutthaya Metaverse cultural learning resources for educational utilization. This study employed a mixed-methods approach. The qualitative phase involved typological analysis and content analysis to identify the key components of the virtual learning environment model. The findings revealed that: 1. The model of the Ayutthaya Metaverse cultural learning resources consists of three main components: (1) Learning Environment, comprising (1.1) Simulation of Experiences and (1.2) Learning Pathways; (2) Media and Learning Models, comprising (2.1) Collaborative Learning and (2.2) Multimedia; and (3) Assessment, comprising (3.1) Task-Based Assessment and (3.2) Question-Based Assessment. 2. The quality assessment of the Ayutthaya Metaverse cultural learning resources yielded a mean score of 4.37, indicating a high level of quality.

*Keywords:* learning resources, virtual environment, metaverse, Ayutthaya Kingdom

**iafor**

The International Academic Forum  
[www.iafor.org](http://www.iafor.org)

## Introduction

The metaverse is an emerging technology that integrates virtual environments with the physical world through immersive three-dimensional digital experiences, enabling users to interact, learn, and construct realistic online identities. In recent years, the metaverse has gained global attention, with significant investments from leading technology companies such as Meta (formerly Facebook), Microsoft, Epic Games, and Tencent, aiming to support the transition toward a future digital society (Suthee Wongprapai, 2022). At the national and urban levels, many countries and major cities have adopted metaverse concepts for urban development, public services, tourism, and learning. Notable examples include Shanghai's integration of metaverse initiatives into its five-year development plan and South Korea's "Metaverse Seoul" project, which aims to enhance public services, tourism, and historical learning through a virtual city platform (Techsauce Team, 2021). In Thailand, initial efforts have been made to develop metaverse-based platforms to support tourism, commerce, and education, particularly in response to changes following the COVID-19 pandemic. However, systematic development of metaverse-based cultural and historical learning resources remains limited.

Ayutthaya is a historical city of great significance to Thailand and serves as a fundamental foundation for the nation's political, administrative, military, cultural, and architectural development. Its influence continued through the Thonburi and Rattanakosin periods. Historical and archaeological evidence indicates that Ayutthaya emerged from the long-term development of communities in the central region of Thailand since around the 12th Buddhist century. The city was uniquely distinguished as an international metropolis, unprecedented in the region. Over its 417-year existence, Ayutthaya developed a well-organized urban structure featuring moats, canals, fortified walls, and clearly designated functional zones. It also functioned as a major center for trade and cultural exchange among diverse international communities. This legacy of prosperity and cultural integration established Ayutthaya as a vital foundation for the later development of Bangkok. (Ayutthaya Historical Park, Fine Arts Department, 2023). Applying metaverse technology to develop cultural learning resources for Ayutthaya presents a promising approach to revitalize historical knowledge through immersive and interactive learning experiences.

## Research Methodology

This study employed a mixed-methods research approach to develop a virtual environment learning resource model on the metaverse. The qualitative phase involved typological analysis and content analysis of data obtained from structured interviews with experts to identify key components of the metaverse learning model. The quantitative phase focused on the development and evaluation of the Ayutthaya Metaverse learning resources.

## Participants

The participants consisted of 12 experts selected through purposive sampling. The expert panel included four metaverse experts, four learning resource experts, one expert in Thai Studies course content, and three experts in educational technology. All participants were lecturers or professionals with relevant experience in their respective fields for at least three years, except for the metaverse experts, who were required to have a minimum of one year of professional experience related to metaverse development or applications. All experts met the specified selection criteria and voluntarily agreed to participate in the research.

## Research Instruments

Two key instruments were employed:

- 1) the metaverse learning model and a structured interview form for expert opinions on the metaverse learning model
- 2) the Ayutthaya Metaverse learning resources

## Data Collection

The qualitative phase involved typological analysis and content analysis of data obtained from structured interviews with experts to identify key components of the metaverse learning model. The quantitative phase focused on the development and evaluation of the Ayutthaya Metaverse learning resources.

## Data Analysis

Qualitative data analysis involved typological analysis and content analysis. Quantitative data analysis included the calculation of the mean and standard deviation.

## Results

Data collection from experts was conducted using in-depth interviews, based on predefined interview questions. The model of the Ayutthaya Metaverse cultural learning resources consists of three main components (1) Learning Environment, comprising (1.1) Simulation of Experiences and (1.2) Learning Pathways; (2) Media and Learning Models, comprising (2.1) Collaborative Learning and (2.2) Multimedia; and (3) Assessment, comprising (3.1) Task-Based Assessment and (3.2) Question-Based Assessment. The results of the evaluation of the Ayutthaya Metaverse cultural learning resource model are presented in Table 1. It was evaluated by three experts, and the details of the results are shown in Table 1.

**Table 1**

*The Results of the Appropriateness Evaluation of the Components of the Ayutthaya Metaverse Cultural Learning Resource Model*

The statement	Mean	S.D.	Interpretation
1. Learning Environment, comprising			
1.1 Simulation of Experiences and	4.83	0.39	Strongly agree
1.2 Learning Pathways	5.00	0.00	Strongly agree
2. Media and Learning Models, comprising			
2.1 Collaborative Learning and	4.58	0.51	Strongly agree
2.2 Multimedia	4.83	0.39	Strongly agree
3. Assessment, comprising			
3.1 Task-Based Assessment and	4.75	0.45	Strongly agree
3.3 Question-Based Assessment	5.00	0.00	Strongly agree
<b>The overall</b>	<b>4.83</b>	<b>0.16</b>	<b>Strongly agree</b>

The analysis of expert opinions regarding the appropriateness of the components of the Ayutthaya Metaverse cultural learning resource model revealed that the overall mean score across all components was 4.83, When considering each aspect, the result showed that the experts strongly agreed with each aspect. Specifically, learning pathway design and question-

based assessment achieved the highest mean score of 5.00. This was followed by experience simulation and multimedia, both of which obtained equal mean scores of 4.83.

The results of the quality evaluation of the Ayutthaya Metaverse cultural learning resources. The Ayutthaya Metaverse cultural learning resources were developed as a single metaverse system using Roblox Studio. The quality of the metaverse system was evaluated by three experts, including one metaverse expert, one learning resource expert, and one educational technology expert.

**Figure 1**  
*The Ayutthaya Metaverse Cultural Learning Resources*



The details of the results are shown in Table 2.

**Table 2**

*The Results of the Quality Evaluation of the Ayutthaya Metaverse Cultural Learning Resources*

The statement	Mean	S.D.	Interpretation
1. All content is accurate, reliable, and supported by historical evidence or scholarly sources.	4.00	0.00	High
2. The virtual environment, including buildings, temples, and historical sites, demonstrates a high level of realism and detailed representation.	4.67	0.58	Highest
3. The content aligns with the learning objectives of the target audience.	4.67	0.58	Highest
4. Menus, commands, and interface symbols are clear, user-friendly, and easy to navigate.	4.00	0.00	High
5. The metaverse-based virtual environment is engaging and visually appealing.	4.00	0.00	High
6. The system operates smoothly without lag, freezing, or slow data loading.	4.67	0.58	Highest
7. Visual and audio elements within the virtual environment are of appropriate quality.	4.67	0.58	Highest
8. Learners are motivated to explore and engage further with the content in the virtual environment.	4.33	0.58	High
9. Learners demonstrate a clear improvement in their understanding of history, art, architecture, and ways of life.	4.33	0.58	High
10. The scoring and assessment system is appropriate and easy to use.	4.33	0.58	High
<b>The overall</b>	<b>4.37</b>	<b>0.40</b>	<b>High</b>

The results of the quality evaluation of the Ayutthaya Metaverse cultural learning resources indicated that the overall mean score was 4.37, which corresponds to a high level of quality based on the established Likert scale criteria. Specifically, the realism of the virtual environment, including buildings, temples, and historical sites; the alignment of content with the learning objectives of the target audience; the system's smooth operation without freezing or slow loading; and the quality of visual and audio elements achieved the highest mean score of 4.67, corresponding to the highest level of quality.

### Conclusion

This study demonstrates that the Ayutthaya Metaverse cultural learning resource model is systematically structured and appropriate for educational use. The model comprises three main components—learning environment, media and learning models, and assessment—which were evaluated by experts at the highest level of appropriateness. The evaluation results indicated strong expert agreement across all components, particularly in learning

pathways and assessment design. In addition, the developed metaverse system exhibited a high level of quality based on the established Likert scale criteria. Key strengths of the system included realistic virtual environments, alignment with learning objectives, smooth system performance, and appropriate visual and audio quality. Overall, the findings confirm that the Ayutthaya Metaverse cultural learning resources are effective and suitable for supporting cultural learning in digital and immersive learning environments.

### **Acknowledgments**

The researchers would like to thank the Institute for Research and Development, Sukhothai Thammathirat Open University, for supporting the research funding.

### **Declaration of Generative AI and AI-Assisted Technologies in the Writing Process**

In the preparation of this research article, the author utilized artificial intelligence tools, specifically ChatGPT, to assist in structuring ideas and enhancing the clarity of the language. All research content, analysis, results, and conclusions presented in this article are solely the work of the author.

## References

- Ayutthaya Historical Park. (n.d.). *Sanphet Prasat Throne Hall*. The Fine Arts Department, Ministry of Culture. <http://virtualhistoricalpark.finearts.go.th/ayutthaya/index.php/en/data.html?layout=edit&id=411>
- Ayutthaya Historical Park. (2023). *History of Ayutthaya*. The Fine Arts Department, Ministry of Culture. <https://www.finearts.go.th/ayutthayahistoricalpark/categorie/history>
- Storeide, M. S. B., George, S., Sole, A., & Hardeberg, J. Y. (2023). Standardization of digitized heritage: a review of implementations of 3D in cultural heritage. *Heritage Science*, 11(1), 1–22. <https://doi.org/10.1186/s40494-023-01079-z>
- Techsauce Team. (2021). *The Seoul Metropolitan Government Announces Its Plan to Become South Korea's First City to Enter the Metaverse and Enable Citizens to Access a Future Emotional City*. <https://techsauce.co/news/seoul-metropolitan-government-enter-the-metaverse>
- Wongprapai, S. (2022). *Metaverse*. Digital Economy Promotion Agency. <https://www.depa.or.th/en/article-view/metaverse-creative-universe-article>

**Contact email:** [suchart.sae@stou.ac.th](mailto:suchart.sae@stou.ac.th)