Learning Experience of Lanna Wisdom Using the Metaverse towards a Creative Economy

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***Abstract*—This research aimed to develop the Learning Experience of Lanna Wisdom Using the Metaverse Towards a Creative Economy Model (LEX-LA) *Creative Journey* and evaluate its appropriateness. The study was conducted in 2 phases. The first phase involved designing a learning experience framework that integrates Lanna local wisdom with metaverse technology, based on experiential learning theory and user-centered design. The second phase focused on validating the model through expert review. The LEX-LA Creative Journey comprises 5 stages: cultural context immersion, knowledge co-construction, digital application, creative product development, and reflective feedback. Experts in educational technology and digital marketing communication affirmed the model's relevance and quality. Notably, the stages emphasizing creativity and cultural engagement were recognized as being particularly impactful. The findings suggest that the LEX-LA Creative Journey enhances learners' creative capacity and supports the development of cultural entrepreneurship, contributing to the sustainable growth of the creative economy.**

***Keywords*—learning model, learning experience, Lanna Wisdom, metaverse, creative economy**

I. Introduction

The world today is rapidly evolving in term of the digital era, with accelerated technological advancements giving rise to a resurgence of interest in natural resources, sustainable living, and traditional craftsmanship. This phenomenon reflects a broader societal shift toward valuing slow living, environmentally-conscious choices, and handcrafted goods, all of which fuels the growth of the creative economy [1]. Nations such as the United Kingdom, Japan, and Hong Kong have integrated creative industries into their economic growth strategies, leveraging cultural assets to boost tourism, exports, and national branding [2, 3]. Thailand, rich in cultural capital, has similarly adopted the creative economy approach to drive its economic reform under the "Thailand 4.0" policy. This policy emphasizes innovation and technology to add value to products and services while integrating biodiversity, heritage, and tourism with knowledge and innovation [4].

In 2020, Thailand's creative industry was valued at 1.19 trillion baht, accounting for 7.58% of the national GDP and employing over 900,000 people [5]. The government has supported collaboration among academia, research institutions, and both public and private sectors to develop high-quality products and skilled labor that meet global standards. This approach enhances the competitiveness of community enterprises and startups while promoting smart agriculture and digital entrepreneurship [6]. The support of the creative economy thus serves as a sustainable development strategy, rooted in the cultural and artisanal wisdom of local communities. It not only generates income but also preserves cultural identity. Today, it forms part of Thailand's national BCG (Bio-Circular-Green) economy agenda, especially within the cultural tourism and creative industries sectors [7].

Thai cultural products, such as the Indigo Collection designed for Leicester City Football Club, exemplify the synergy between local wisdom and modern branding [8]. Meanwhile, digital craft trends such as the use of 3D printing and automated production tools enable artisans to scale their creativity without replacing traditional values, instead amplifying human-centered design and innovation [9]. However, labor shortages and an aging population pose threats to the growth of Thailand's creative industries. Compared to Indonesia's 15.9 million creative workers, Thailand lags with only 931,000 such worker and faces a decline [10]. Therefore, integrating Lanna local wisdom with technology and creative thinking is crucial to mobilizing soft power on the global stage while creating inclusive, sustainable economic opportunities.

This study aims to explore the potential for integrating Lanna local wisdom with immersive technology to promote the creative economy in Northern Thailand. The specific objectives are as follows:

1) To study the process of learning experience with regard to Lanna local wisdom identity through the metaverse.
2) To develop a learning experience model of Lanna local wisdom identity through the metaverse for advancing the creative economy.
3) To evaluate the developed learning experience model in terms of its appropriateness and effectiveness in enhancing Lanna cultural identity and supporting creative economic development.

II. Literature Review

A. Learning Experience

Learning Experience Design (LXD) is a learner-centered approach positioned at the intersection of User Experience Design (UXD) and instructional design. It involves the creation of learning environments, tools, or systems that

emphasize both the usability of the interface and the effectiveness of the instructional content. LXD is inherently interdisciplinary, requiring expertise across educational technology, psychology, design, and data science [11]. UXD principles enhance user satisfaction by improving accessibility and engagement. When applied to LXD, these principles aim to improve learners' memory retention, comprehension, and application of content. According to David A. Kolb, effective learning occurs through a four-stage experiential cycle: (1) Concrete Experience, (2) Reflective Observation, (3) Abstract Conceptualization, and (4) Active Experimentation [12].

LXD seeks to minimize friction, promote learner enjoyment, and enhance engagement in digital platforms. The learner's journey is viewed holistically—from discovery to participation—across multiple devices and interfaces. Four key elements of LXD are as follows:

1) Understanding Learners—Learners differ in terms of experience, prior knowledge, learning preferences, and technological familiarity. LXD uses adaptive tools to customize pathways and optimize engagement.
2) Experiential Learning—Experiences should be meaningful, active, and reflective. Effective learning integrates cognitive, emotional, and physical aspects [12].
3) Engagement and Motivation—The design LXD (Learning Experience Design) must prioritize human connection, not just instructional delivery, to ensure relevance and satisfaction.
4) Sensory Design—The visual, auditory, and emotional dimensions of content must align with the learner's sensory perception, creating immersive and aesthetically pleasing environments [13].

B. Lanna Local Wisdom

Local wisdom refers to community-based knowledge transmitted through generations. It encompasses value system, practices and lifeways developed in harmony with local ecosystems [14]. Such knowledge helps preserve environmental balance and cultural integrity, as seen in spiritual narratives that shape conservation behaviors in places like Singosari, Indonesia [15].

Cultural heritage is classified into:

1) Tangible Heritage—Physical artifacts such as ancient monuments, textiles, tools, architecture, and arts.
2) Intangible Heritage Oral traditions, performing arts, rituals, social customs, and ecological knowledge [14].

In the Thai context it is possible to expand this into seven categories: language, folklore, performing arts, social practices, traditional crafts, environmental knowledge, and indigenous sports. Lanna textiles serve as a prominent example of living heritage.

Lanna local wisdom refers to the traditional knowledge and practices rooted in Northern Thailand. It reflects community values, environmental balance, and spiritual beliefs passed through generations. For instance, Lanna textiles serve as a prominent example of living heritage, incorporating cultural patterns and symbolism

- Lamphun is famous for brocade silk patterns handed down from royal traditions.
- Mae Hong Son preserves Karen back-strap weaving traditions.
- Phayao & Chiang Rai reflect Tai Lue weaving styles involving dual-thread techniques.
- Mae Chaem in Chiang Mai is known for teen jok (intricate hem patterns).
- Nan features flowing water motifs influenced by the Tai Lue culture and temple murals.

C. Customer Journey

In the context of cultural learning and entrepreneurship, the customer journey offers a strategic lens to understand how learners engage with local wisdom from initial exposure to active participation and sharing. Adapted from marketing and experience design, this framework enables educators to track learners' emotional, cognitive, and behavioral responses as they explore, evaluate, and apply cultural knowledge in meaningful ways.

The learning-focused customer journey comprises five key stages: Awareness, Appeal, Ask, Action, and Advocacy. Learners first become aware of cultural content (Awareness), followed by developing interest and seeking relevance (Appeal). They then initiate inquiry or dialogue (Ask), engage in creative application (Action), and finally share or promote their learning outcomes (Advocacy).

This progression allows for the design of personalized, immersive pathways that enhance learner motivation and community connection. By adopting customer journey thinking in educational design, learners move from passive recipients to cultural co-creators—transforming traditional knowledge into innovative, socially relevant outcomes that strengthen cultural identity and support creative entrepreneurship [16].

D. Metaverse

The term "Metaverse" is derived from "meta" (beyond) and "universe," originally coined in Snow Crash (1992) by Neal Stephenson. It refers to virtual spaces where people interact via avatars in real-time 3D environments [17].

The Metaverse blends various technologies: Augmented Reality (AR), Virtual Reality (VR), Mixed Reality (MR), Blockchain, Artificial Intelligence (AI), Internet of Things (IoT), 5G and Cloud Computing

A robust metaverse ecosystem includes seven layers [18]:

1) Infrastructure—Network technologies (e.g., 5G, cloud).
2) Human Interface—Devices such as smart glasses and haptic suits.
3) Decentralization—Blockchain and AI agents.
4) Spatial Computing—3D rendering, mapping, and XR engines.
5) Creator Economy—Content design tools and asset markets.
6) Discovery—Curation tools, advertising, and app stores.
7) Experience—Immersive worlds for socializing, gaming, and learning.

E. Creative Economy

The creative economy refers to an economic development model driven by the integration of knowledge, education, creativity, and intellectual property. It is closely linked to cultural foundations, accumulated social knowledge, and modern technology and innovation. In Thailand, the creative economy has become a national focus, incorporated into the Eleventh National Economic and Social Development Plan

(2012–2016), which promotes a shift from a resource- and labor-based economy toward a knowledge-based economy. The plan emphasizes enhancing value across all stages of the supply chain by fostering an environment conducive to creativity and innovation [19].

The creative economy represents a fundamental transformation in Thailand's economic structure. Traditionally, the economy relied on low-cost resources and labor; however, the creative economy shifts the focus to intellectual value and innovation as the core drivers of production. To realize this transformation, the government must formulate concrete policies and introduce public strategies that all stakeholders can understand and work toward collectively, enabling sustainable and effective development [19].

Globally, the creative economy comprises all aspects of the creative industries, including trade, labor, and production. It is among the most dynamic sectors in the global economy, offering significant opportunities for developing countries to leapfrog into high-growth sectors. The concept itself continues to evolve, emerging from the intersection of human creativity, intellectual property, knowledge, and technological advancement. At its core, the creative economy is defined by knowledge-based economic activities underpinned by creative industries [20]. Creative industries in the Thai context include 15 sectors: 1. Handicrafts, 2. Music, 3. Performing Arts, 4. Visual Arts, 5. Film, 6. Broadcasting, 7. Publishing, 8. Software, 9. Advertising, 10. Design, 11. Architecture, 12. Fashion, 13. Thai Cuisine, 14. Traditional Medicine, 15. Cultural Tourism [20].

These are grouped into five clusters: cultural roots, creative content, creative services, creative products, and related industries [21].

III. Methodology

The research was conducted in two main phases as follows:

Phase 1: *The development of the LEX-LA Creative Journey (Learning Experience of Lanna Wisdom Using the Metaverse)*

This phase focused on designing the LEX-LA *Creative Journey* to enhance the learning experience of new-generation entrepreneurs through local wisdom and immersive technologies. The model development was based on the analysis and synthesis of 23 academic sources, including research articles, conceptual papers, and case studies related to experiential learning, metaverse technology, Lanna local wisdom, and creative economy between 2015 and 2023. The process included the following steps:

Step 1: Synthesizing the components of experiential learning design.

Step 2: Synthesizing the components of the customer journey in relation to cultural and creative learning.

Step 3: Analyzing the structure of the metaverse, including avatars, technology infrastructure, and virtual ecosystems.

Step 4: Designing the LEX-LA Creative Journey through the following sub-steps:

1) Studying and synthesizing core concepts related to the learning experience, Lanna local wisdom, metaverse systems, and creative thinking development.
2) Drafting the initial version of the LEX-LA Creative Journey. The model includes seven core components: Inputs, Experiencing, Reflecting, Thinking, Acting, Evaluating, and incorporating the Metaverse Environment.
3) Presenting the draft to academic advisors for feedback and revising the model accordingly.

Phase 2: Evaluation of the appropriateness of the LEX-LA Creative Journey

This phase focused on assessing the suitability and effectiveness of the LEX-LA Creative Journey by experts. The steps included:

Step 1: Designing a 5-point Likert scale questionnaire to assess the appropriateness of the model. The questionnaire covered seven main components and 20 detailed elements aligned with the LEX-LA Creative Journey.

Step 2: The model was evaluated by a panel of five experts, categorized as follows:

Three experts in educational technology and learning design. Two experts in digital marketing communication and creative entrepreneurship. All experts were selected based on their academic and professional experience related to immersive learning, cultural communication, and innovation design.

Step 3: The data were analyzed using statistical methods, including mean and standard deviation, to determine the level of agreement with regard to the appropriateness of each component. In addition to descriptive statistics, the Content Validity Index (CVI) was applied to measure expert consensus across individual items (I-CVI) and the overall scale (S-CVI/Ave). This process helped confirm the validity of the evaluation instrument and informed the final refinements of the model. Internal consistency reliability (e.g., Cronbach's alpha) will be assessed in future phases when instruments are used with actual learner groups.

The results from this phase were used refine and to finalize and validate the LEX-LA Creative Journey, supporting its readiness for future research implementation and practical application.

IV. Results

This section presents the findings derived from the research process, including the development, structure, and expert evaluation of the LEX-LA Creative Journey as an experiential learning framework for Lanna local wisdom through the metaverse. The results are organized according to the research objectives and are based on document synthesis, model design, and expert validation. Both qualitative insights and quantitative analyses are used to support the appropriateness and potential application of the proposed model in the context of creative economy development.

A. Synthesizing the Components of Experiential Learning Design

The synthesis was conducted using content analysis techniques from ten international academic journal articles published over the past five years. These articles focused on experiential learning [22–27]. As shown in Table 1 the resulting framework consolidates core design elements that align with both constructivist learning theory and the integration of local cultural identity into virtual learning contexts.

Table 1. Synthesizing the components of experiential learning design

Learning experience Process	Experience	Reflecting	Thinking	Acting
[22]	✓	✓	✓	✓
[23]	✓	✓	✓	✓
[24]	✓	✓	✓	✓
[25]	✓		✓	✓
[26]	✓	✓	✓	✓
[27]	✓	✓	✓	✓
[28]	✓	✓	✓	✓
[29]	✓		✓	✓
[30]	✓	✓	✓	✓
[31]	✓		✓	✓

Based on the synthesis presented in Table 1, the learning experience design process for Lanna local wisdom identity consists of four key components, described as follows:

1) **Experiencing**—This component involves engaging directly in a new situation or reinterpreting past experiences in a new context. It emphasizes immersion in real or simulated scenarios that challenge the learner's existing understanding.
2) **Reflecting**—Encountering new experiences often leads to a mismatch between prior knowledge and new realities. This stage focuses on introspection and emotional processing, encouraging learners to reflect on their thoughts and feelings. Questioning techniques are employed to help crystallize understanding and resolve cognitive dissonance.
3) **Thinking**—Reflection naturally leads to the emergence of new ideas or the adaptation of existing abstract concepts. At this stage, learners analyze and synthesize insights gained from experience, formulating new perspectives that deepen their understanding.
4) **Acting**—Learning is not complete until new ideas are tested in real-world contexts. This phase emphasizes applying knowledge in practical or authentic situations, allowing learners to experiment and observe the outcomes of their actions.

B. Synthesizing the Customer Journey Process in Learning Lanna Local Wisdom

In the context of promoting cultural learning and engagement among new-generation entrepreneurs, understanding the Customer Journey Process is essential. This process helps identify how learners and users interact with local wisdom-based content from their initial awareness to eventual advocacy. The synthesis presented here is based on a review of ten academic studies published between 2020 and 2023, with a focus on learning behavior, cultural identity, and consumer decision-making in educational and entrepreneurial contexts.

Table 2 summarizes the synthesized customer journey process applied to the learning of Lanna local wisdom by new-generation entrepreneurs. This process consists of five sequential stages:

1) **Awareness**—The learner first becomes aware of the brand, product, or cultural identity. This stage establishes recognition and opens the door for further exploration.
2) **Appeal**—Interest is formed. The learner begins to gather information and demonstrate curiosity by researching or exploring related content.
3) **Ask**—Engagement deepens through inquiry. The learner actively seeks additional information or initiates dialogue with experts or community members.
4) **Action**—This phase represents the decision to participate or act. Learners apply the knowledge gained by starting to create or engage in a specific activity.
5) **Advocacy**—Satisfied learners begin to share their experiences and endorse the learning or product. This word-of-mouth effect extends the impact of cultural education and fosters sustainable engagement.

Table 2. Synthesizing the components of the customer journey in relation to cultural and creative learning

Customer Journey Process	Awareness	Appeal	Ask	Action	Advocacy
[32]	✓	✓	✓	✓	✓
[33]	✓	✓	✓	✓	✓
[34]	✓	✓	✓	✓	
[35]	✓	✓	✓	✓	
[36]	✓	✓		✓	✓
[37]	✓	✓		✓	✓
[38]	✓	✓	✓	✓	
[39]	✓	✓	✓	✓	✓
[40]	✓		✓	✓	✓
[41]	✓		✓	✓	✓

C. Synthesizing the Core Components of the Metaverse

The design of immersive learning experiences requires a foundational understanding of the metaverse and its structural components. In this study, the metaverse framework is synthesized into three core components that support learner interaction, identity expression, and digital community engagement. These components - Avatar**,** Technology**,** and Ecosystem - enable the design of meaningful and culturally grounded experiences in virtual environments. The synthesis is shown in Table 3.

Table 3. Synthesizing the core components of the Metaverse

	Avatar	Technology					Ecosystem						
Metaverse Component	3D	Augmented reality (AR)	virtual reality (VR)	Extended Reality (XR)	Artificial Intelligence (AI)	Internet of Things (IoT)	Infrastructure	Human Interface	Decentralization	Spatial Computing	Creator Economy	Discovery	Experience
[42]	✓	✓	✓			✓	✓	✓		✓	✓		✓
[43]	✓			✓	✓		✓	✓	✓	✓		✓	✓
[44]	✓			✓		✓	✓	✓		✓	✓	✓	✓
[45]	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓
[46]	✓	✓	✓				✓	✓		✓	✓	✓	✓
[47]	✓	✓	✓		✓		✓	✓	✓	✓		✓	✓
[48]	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓
[49]	✓			✓	✓	✓	✓	✓	✓	✓			✓
[50]	✓			✓	✓	✓	✓	✓	✓	✓			✓

This synthesis provides a practical lens for designing learning environments that integrate Lanna local wisdom into the digital realm. In particular:

- **Avatars** serve as cultural ambassadors, allowing users to embody and interact with heritage in personalized ways.
- **Technology** ensures a seamless and immersive experience, connecting learners through extended reality tools.
- **The Ecosystem** supports long-term engagement by offering structured, scalable layers—from infrastructure and spatial computing to creator tools and community

discovery.

These elements align closely with immersive learning theory and contribute directly to the LEX-LA Creative Journey, which applies metaverse principles to foster cultural identity and creative economy development.

D. Analysis and Synthesis of the Learning Experience Process and Metaverse Components

The analysis and synthesis of the learning experience process for Lanna local wisdom identity, is conducted through the integration of experiential learning, cultural content, and immersive technology. Table 4 presents an analysis and synthesis of the learning experience process using Lanna local wisdom through the metaverse. The model integrates learning experiences across four stages: Experience, Reflecting, Thinking, and Acting mapped with metaverse components categorized into three main groups: Avatar, Technology, and Ecosystem.

Table 4. Analysis and Synthesis of the learning experience process using the metaverse

		Experience	Reflecting	Thinking	Acting	
Journey Learning experience Process		**Awareness**	**Action**	**Ask**	**Appeal**	**Advocacy**
Avatar	3D	✓	✓	✓	✓	✓
Technology	Augmented reality (AR)	✓	✓	✓	✓	✓
	Virtual reality (VR)	✓	✓	✓	✓	✓
	Extended Reality (XR)	✓				
	Artificial Intelligence (AI)	✓	✓	✓	✓	✓
	Internet of Things (IoT)					
Ecosystem	Infrastructure	✓	✓	✓	✓	✓
	Human Interface	✓	✓	✓	✓	✓
	Decentralization	✓	✓	✓	✓	✓
	Spatial Computing	✓	✓	✓	✓	✓
	Creator Economy	✓	✓	✓	✓	✓
	Discovery	✓	✓	✓	✓	✓
	Experience	✓	✓	✓	✓	✓

E. Designing and Validating the Learning Experience Creative Journey of Lanna Local Wisdom through the Metaverse

Based on a systematic analysis and synthesis of documents as presented in Tables 1, 2, and 3, this study integrated the experiential learning framework, the customer journey process, and the core components of the metaverse to develop the LEX-LA Creative Journey: A Metaverse-Based Learning Experience Framework for Lanna Cultural Wisdom.

The model was purposefully designed to promote both cultural learning and creative innovation effectively, as illustrated in Fig. 1.

The LEX-LA Creative Journey comprises seven core components designed to enhance the learning experience of Lanna local wisdom through immersive metaverse environments. This model aims to support new-generation entrepreneurs in developing culturally inspired creative products. The components are described as follows:

1) *Inputs*—This component defines the learning foundation and consists of four main elements:
- **Learning Objectives:** Focusing on the development of creative products derived from local wisdom for application in the creative economy.
- **Lanna Local Wisdom:** Including cultural knowledge such as with regard to textile and herbal wisdom.
- **Target Learners:** New-generation entrepreneurs with an interest in Northern Thai culture, particularly those residing in or working within the region.
- **Experts and Cultural Mentors:** Including specialists in creative economy, product/service design, and local artisans or wisdom keepers.

2) *Experiencing*—This phase begins with Perception**,** designed to inspire and stimulate curiosity through the presentation of creative cultural products—such as virtual lookbooks or immersive exhibitions. Once learners are engaged, they proceed to Learning, which involves the use of interactive media, virtual demonstrations of materials, and traditional processes presented via gamified content to reinforce knowledge and memory.

3) *Reflecting*—After exposure to new cultural content, learners often experience cognitive dissonance between prior understanding and new experiences. This stage fosters reflection and critical inquiry through interviews, consultations, and dialogue with community experts, artisans, and scholars - facilitated via virtual meeting rooms and interview simulations in the metaverse.

4) *Thinking*—Reflection leads to ideation and conceptual transformation**.** Learners analyze their insights, synthesize knowledge, and begin developing new ideas tailored to identified user needs. This is documented through Sketch Design, incorporating expert feedback through iterative consultation - again using the virtual meeting or interview format as in the Reflecting phase.

5) *Acting*—In this phase, learners transform their concepts into tangible outcomes by developing creative prototypes rooted in local wisdom. Outputs may include digital sketches**,** 3D models**,** and physical mock-ups. The process emphasizes creativity, cultural continuity, and innovation through a hybrid of digital and craft-based practices.

6) *Evaluation*—Learners then present their prototypes and service concepts through a Virtual Showcase or Market Test**.** They share the narrative (story) behind the materials and cultural origins of the products, receiving feedback from both expert panels and target consumer groups using formats such as visual conferences and interactive presentations.

7) *Metaverse Environment*—The immersive digital environment is composed of three core components:
- **Avatar**—A customizable virtual character representing each learner in the metaverse classroom.
- **Technology**—Tools such as AR and VR that support immersive and embodied learning.
- **Ecosystem**—The broader infrastructure that supports learning, including spatial computing, discovery systems, social engagement platforms, and creator economy tools.

This framework creates a bridges between traditional cultural knowledge and future-oriented learning environments, offering a pathway for local wisdom to be preserved, adapted, and creatively transformed within the digital age.

Table 5 presents a synthesized overview of the LEX-LA

Creative Journey, illustrating the integrated approach to designing a learning experience of Lanna local wisdom through the metaverse**.** It connects the core learning phases - Experiencing, Reflecting, Thinking, Acting, and Evaluating -with immersive technologies, specific instructional strategies, and the development of creative thinking skills. This framework ensures that learners engage in a holistic and transformative process, from cultural immersion to innovation-driven action, all within a virtual ecosystem

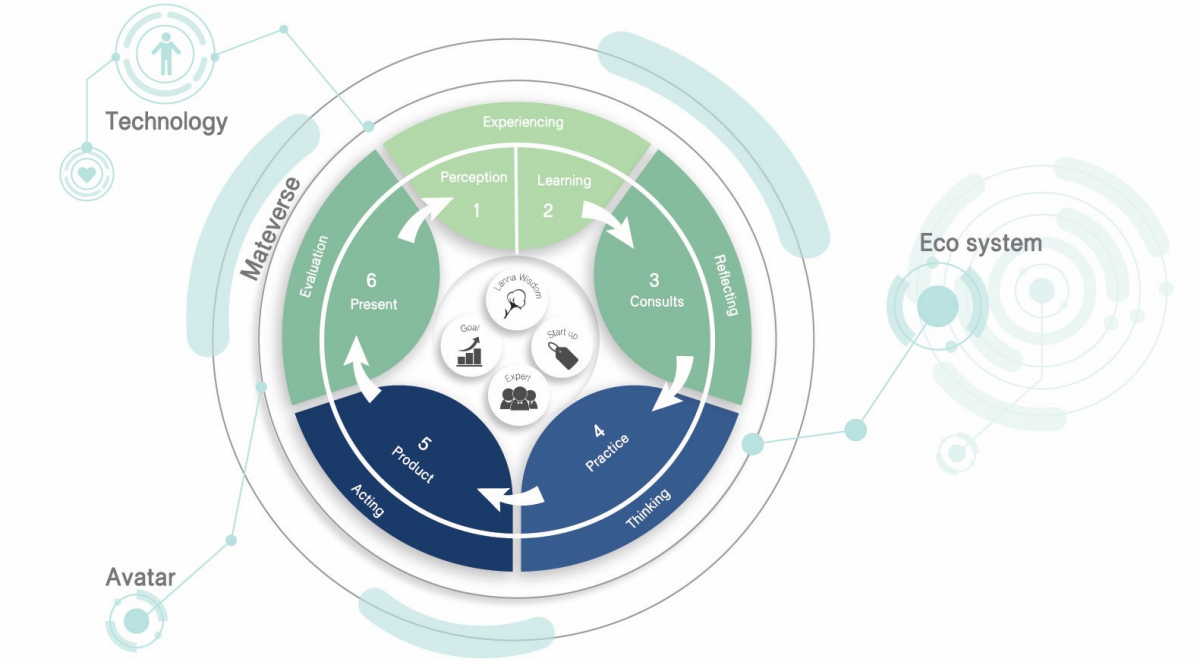

Fig. 1. The LEX-LA creative journey: A learning experience model of Lanna local identity wisdom through the metaverse.

Table 5. Approach of model

Learning Phase	Learning Process	Experience Description	Metaverse Tools	Creative Thinking Skills
Experiencing	Perception	Stimulating awareness and inspiration through a virtual exhibition showcasing creative products rooted in Lanna wisdom (e.g., Lookbook or digital model).	• Avatar • Virtual Exhibition • Ecosystem	Originality
	Learning	Studying production processes of cultural products/services through: • Content on Lanna wisdom/materials/processes • Media (videos, interactive images) • Gamified learning activities	• Ecosystem • AR/VR • Gamification	Ideational Fluency
Reflecting	Consultation	Reflecting through dialogue with experts/community elders to deepen understanding and resolve cognitive dissonance. • Virtual consultations • Interview sessions	• Virtual Avatar System • Workplace	Flexibility
Thinking	Practice	1. Analyze insights from learning and define real user needs 2. Draft new product/service ideas for the target group using sketch design 3. Receive expert feedback 4. Revise and improve	• Ecosystem • AR/VR • Virtual Avatar System	• Elaboration
Acting	Product	Develop creative cultural products/services from Lanna wisdom: • Sketch Design on Digital Board • Prototype 3D Model	• Avatar • Virtual Exhibition • Ecosystem	• Creativity
Evaluation	Presentation	Present developed products/services through storytelling about materials and community heritage. Share with target users and experts via: • Showcase or Market Testing • Visual Conference	• Ecosystem • AR/VR/XR • Virtual Avatar System • Virtual Exhibition	• Ideational Fluency • Elaboration

F. Results of the Expert Evaluation on the Appropriateness of the Learning Experience Model of Lanna Local Wisdom through the Metaverse for Creative Economy Development

To ensure the validity and effectiveness of the developed model, the research incorporated a two-step expert evaluation process. The first step focused on the validation of the assessment instrument itself, followed by an evaluation of the model's appropriateness using the validated tool.

In the first step, five experts assessed the content validity of the 20-item questionnaire designed to evaluate the LEX-LA Creative Journey. The validation employed the Content Validity Index (CVI) method, using five key criteria:

clarity, relevance, cultural alignment, technological integration, and learner engagement.

The results showed that all items achieved an Item-Level CVI (I-CVI) ranging from 0.80 to 1.00, indicating strong expert agreement. The Scale-Level CVI Average (S-CVI/Ave) was 0.96, suggesting that the instrument was content-valid and suitable for evaluating the model. Table 6 presents the results of the CVI analysis of the 20-item questionnaire.

Table 6. Content Validity Index (CVI) Analysis of the LEX-LA creative journey evaluation items

Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert in Agreement	I-CVI	UA
Item 1	1	1	1	1	1	5	1.0	1
Item 2	1	1	1	1	1	5	1.0	1
Item 3	1	1	1	1	1	5	1.0	1
Item 4	1	1	1	1	1	5	1.0	1
Item 5	1	1	1	1	0	4	0.8	0
Item 6	1	1	1	1	1	5	1.0	1
Item 6	1	0	1	1	1	4	0.8	0
Item 8	1	1	1	1	1	5	1.0	1
Item 9	1	1	1	1	1	5	1.0	1
Item 10	1	1	1	1	1	5	1.0	1
Item 11	1	1	1	1	1	5	1.0	1
Item 12	1	1	1	1	1	5	1.0	1
Item 13	1	1	1	1	1	5	1.0	1
Item 14	1	1	1	1	1	5	1.0	1
Item 15	1	1	1	1	1	5	1.0	1
Item 16	1	1	1	1	1	5	1.0	1
Item 17	1	1	1	1	1	5	1.0	1
Item 18	1	0	1	1	1	4	0.8	0
Item 19	0	1	1	1	1	4	0.8	0
Item 20	1	1	1	1	1	5	1.0	1
	0.95	0.8	1	1	0.95	S-CVI/Ave	0.96	
						S-CVI/UA		0.80
						0.96		

Note: I-CVI = Item-Level Content Validity Index; UA = Universal Agreement; S-CVI = the sum of the I-CVI divided by the number of items.

In the second step, another panel of five experts specialized in educational technology, instructional design, digital marketing communication, and cultural entrepreneurship used the validated questionnaire to evaluate the appropriateness of the LEX-LA Creative Journey model. The assessment was conducted using a 5-point Likert scale, covering seven core components and twenty specific sub-elements of the model. Table 7 presents the evaluation results from the expert panel.

Table 7. Evaluation of the appropriateness of the LEX-LA creative journey

Component		Result		Appropriateness Level
		Mean	S.D.	
Input	• Goals: Learning goals aimed at promoting the creative economy	4.62	0.52	Highest
	• Lanna Wisdom: (Content) Local wisdom content reflecting the identity of Lanna culture	4.50	0.53	Highest
	• Start Up: New-generation entrepreneurs or learners interested in cultural innovation	4.62	0.52	Highest
	• Expert: Experts in creative economy, service design, or local craftsmanship	4.62	0.52	Highest
Experiencing	• Perception: Stimulating awareness through virtual exhibitions featuring creative local products	4.75	0.46	Highest
	• Learning: Learning activities that immerse learners in cultural experience	4.62	0.52	Highest
Reflecting	• Consults: Using guiding questions and expert consultations to stimulate reflective thinking	4.88	0.35	Highest
Thinking	• Practice: Analysis and synthesis of learning to generate ideas for product/service development	4.50	0.53	Highest
Acting	• Product: Learners transform knowledge into tangible cultural products/services	4.50	0.53	Highest
Evaluation	• Present: Presenting creative products/services aligned with the creative economy concept	4.62	0.52	Highest
Metaverse	• Avatar: Digital representations of learners in the virtual world	4.88	0.35	Highest
	• Technology: Immersive technologies (AR/VR/AI) for learning engagement	4.88	0.35	Highest
	• Ecosystem: A supportive virtual learning environment that enables interaction and sustainability	4.62	0.52	Highest
Model Optimization: LEX-LA Model is appropriate for continuous development and practical implementation		4.38	0.52	High
LEX-LA Model can use to learning experience program according to objectives.		4.88	0.35	Highest

The model received "High" to "Highest" ratings across all dimensions, with notable strengths in clarity, cultural relevance, and the integration of immersive technologies. The experts also offered constructive feedback, which was used to refine the model's structure, terminology, and user interface.

These evaluations confirmed that the LEX-LA Creative Journey is conceptually robust and practically applicable, effectively supporting immersive learning, cultural preservation, and innovation-driven economic development. The feedback informed key refinements, helping to ensure the model's readiness for broader implementation in both educational and entrepreneurial contexts.

G. Immersive Platform Design

To further enhance the model's applicability in real

educational environments, the learning platform was spatially structured into six immersive zones. These zones correspond to key learning activities and facilitate a progression through the LEX–LA Creative Journey. Each zone was designed to support a specific learning phase aligned with experiential learning principles and metaverse-based interaction.

Table 8 presents the design structure of the immersive learning platform, highlighting each zone's core purpose and representative activities. This table helps illustrate how the theoretical model has been translated into a virtual space that supports interactive and culturally-grounded learning experiences.

Table 8. Design of the immersive learning platform based on the LEX–LA creative journey

Zone	Linked LEX–LA Component	Purpose	Example Activities
Welcome Area	Input	Orientation and onboarding for new users	• Intro video • platform tour
Wisdom Gateway	Experiencing -Perception	Presentation of cultural narratives and inspiration	• Virtual story wall • local wisdom showcase
Learning Room	Experiencing -Learning	Structured delivery of content and media	• Pre-learning quiz • Mini-lessons • Video learning
Consults Corner	Reflecting -Consults	Peer and mentor interaction	• Avatar-based Q&A • Expert consultation
Practice Lab	Thinking -Practice	Visual thinking and guided problem-solving	• Canvas-based ideation • Padlet reflection • Sketching idea
Product Maker	Acting -Product	Creative development of tangible outputs	• Digital-to-physical making • Creative Product prototyping (picture/video/3D)
Showcase Stage	Evaluation -Present	Final presentation and storytelling	• Learner pitch • Digital showcase • Peer feedback

The spatial design of the immersive learning platform is visually illustrated in Fig. 2, which presents the interconnected zones aligned with the LEX–LA Creative Journey model. This spatial configuration reinforces the model's immersive quality and supports its seamless implementation within virtual learning environments.

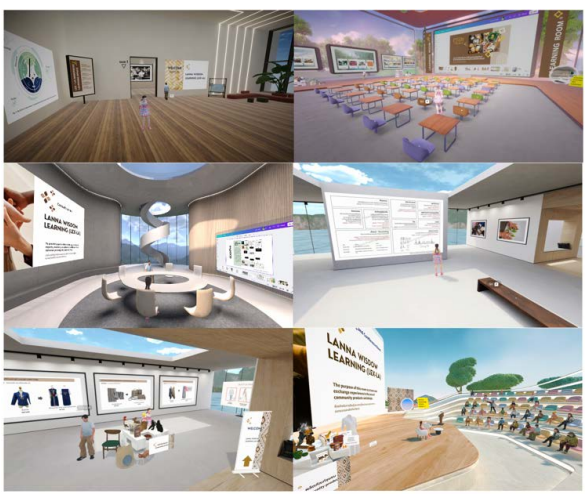

Fig. 2. LEX-LA immersive learning platform.

A preliminary pilot test was conducted with undergraduate learners to explore the usability and learner engagement across all six zones. Initial feedback suggested high levels of motivation, especially in the Practice Lab and Showcase Stage. The full results of this pilot implementation will be presented in a follow-up study focused on learner experience, usability metrics, and learning outcomes.

V. Discussion

This study aimed to design and validate a metaverse-based learning experience model the LEX-LA Creative Journey to promote the identity of Lanna local wisdom and support creative economy development. The discussion is presented in three dimensions: theoretical integration, practical application, and model validation.

A. Theoretical Integration of Learning, Marketing, and Technology

The development of the LEX-LA Creative Journey was grounded in the synthesis of three conceptual domains: experiential learning design, the customer journey process, and metaverse components. These were systematically analyzed from a review of 28 international academic sources, as shown in Tables 1–2. The experiential learning cycle (Experience, Reflecting, Thinking, Acting) was confirmed as a suitable foundation for deep learning, aligning with constructivist and immersive learning theories [22–31]. When combined with the customer journey stages (Awareness, Appeal, Ask, Action, Advocacy) [32–41], the model was able to link learning to real-world entrepreneurial behavior, thus making it particularly relevant for new-generation learners and local startups. Meanwhile, the integration of metaverse components (Avatar, Technology, Ecosystem) [42–50] provided immersive and interactive learning environments that reflect current trends in education and innovation.

B. Learning Experience that Enhances Cultural and Economic Value

The LEX-LA Creative Journey embeds Lanna cultural identity into digital learning. The model guides learners through cultural exploration, reflection, and product development. The use of digital storytelling, avatar-driven interaction, and gamified content within a metaverse space enhances motivation and retention—core principles of learner-centered design. Learners are not only consumers of information but become co-creators of innovation rooted in cultural wisdom. This finding aligns with previous research which suggests that learning experiences that connect with heritage and community values lead to both personal growth and social innovation [24, 29, 44].

C. Model Evaluation and Expert Validation

The results of the evaluation results by eight experts in digital education, instructional design, and creative entrepreneurship indicated that the LEX-LA Creative Journey Model demonstrated a high level of appropriateness across all components. The overall mean score was 4.72 (S.D. = 0.17), with particularly strong ratings for the Input, Experience, and Metaverse components highlighting the model's clarity, contextual relevance, and technological integration. In addition to the Likert-based evaluation, a

content validity analysis was conducted using the Content Validity Index (CVI) to ensure that the instrument used for expert review was appropriate. The Scale-Level CVI Average (S-CVI/Ave) was calculated at 0.96, reflecting satisfactory content alignment and expert consensus. While the model was rated highly overall, experts offered constructive feedback, particularly regarding interface clarity and learner onboarding strategies. These insights were used to refine the model and they also point to opportunities for continued iterative improvement based on learner testing and real-world implementation.

D. Pilot Study Implementation

In addition to the expert review, the model was trialed in a real-world educational setting using an immersive digital environment. Undergraduate learners participated in exploratory activities within the LEX-LA Immersive Learning Space. Informal observations and initial feedback indicated active participation, appreciation for cultural content, and smooth interaction with the platform. These insights were used to refine key aspects of the model, including interface design and learning flow. While not part of the formal evaluation, the pilot provided valuable input for future model deployment and research phases.

E. Implications for Future Practice

The LEX-LA Creative Journey has potential applications for cultural entrepreneurship education, digital transformation of local craft communities, and immersive learning environments in Thailand and other ASEAN regions. It supports Thailand's BCG (Bio-Circular-Green) economic policy and aligns with global trends in metaverse adoption for education.

VI. Conclusion

This study aimed to design and validate the LEX-LA Creative Journey, a learning experience model that integrates the identity of Lanna local wisdom with metaverse technologies to promote creative economy development. The research was conducted in three phases: (1) synthesizing theoretical components from international literature on experiential learning, customer journey processes, and metaverse frameworks; (2) designing the LEX-LA Creative Journey based on the integrated findings; and (3) evaluating the model's appropriateness through expert validation.

The resulting model comprises seven interrelated components: **Input, Experiencing, Reflecting, Thinking, Acting, Evaluation,** and the **Metaverse.** Each component is designed to promote learner engagement, cultural awareness, and practical innovation. Expert evaluations from specialists in Information and Communication Technology for Education and Digital Marketing Communication confirmed the model's high degree of appropriateness, with an average score of 4.72 out of 5. The highest-rated elements included goal alignment, content relevance, and the technological integration. Although not included in the formal assessment phase, the model was informally trialed with learners, informing minor refinements and offering insights for future pilot studies and implementation. Minor improvements were suggested for model optimization, which presents opportunities for future research and piloting in real learning environments.

In conclusion, the LEX-LA Creative Journey creates a bridge between cultural heritage and immersive digital learning. The model promotes SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), SDG 11 (Sustainable Cities and Communities), and SDG 17 (Partnerships for the Goals). By promoting entrepreneurial and culturally grounded learning, the model empowers learners and supports local innovation. In addition to the conceptual framework, the model has been translated into an immersive learning platform composed of seven interconnected zones: Welcome Area, Wisdom Gateway, Learning Room, Consultation Corner, Practice Lab, Product Maker Zone, and Showcase Stage. These zones operationalize the LEX–LA components and offer learners a holistic journey from inspiration to creation and reflection.

The platform was piloted with undergraduate learners, yielding positive feedback in term of usability and engagement particularly within the Practice Lab and Showcase Stage. This reinforces the model's practical viability and lays the groundwork for broader application and future research. The model holds strong potential for application in educational and entrepreneurial contexts. Future empirical studies involving broader implementations will help validate its impact and scalability across diverse learning environments.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Niramol Prasertphongkun developed the research framework, created the LEX-La model, and draft the initial version of the manuscript. Phobson Tichai supported the design of the immersive learning platform and contributed to the development of supplementary media. Rueanglada Punyalikhit coordinated academic collaboration and refined the content related to the creative economy. Pallop piriyasurawong and Prachyanun Nilsook provided academic consultation on educational technology and verified the accuracy of the research methodology and evaluation process. All authors reviewed and approved the final version of the manuscript.

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