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# “From Plate to Play”: Transforming Nakhon Pathom’s ‘Khao Moo Daeng’ Intangible Cultural Heritage into a Board Game Learning Innovation

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## Abstract

*Intangible Cultural Heritage (ICH) is knowledge, practices, and lived experiences transferred from one generation to the next. In Thailand, Khao Moo Daeng (Thai-Style Red Pork on Rice), a famous local food of Nakhon Pathom Province, has been registered as a National Intangible Cultural Heritage. Transforming such cultural knowledge into creative instructional media offers a promising approach to enhancing youth engagement with the cultural heritage. This study aimed to (1) develop a board game-based instructional innovation grounded in intangible cultural heritage and (2) evaluate the quality of the developed board game. This research is part of a broader project entitled “Creative Education”: Conceptual Framework of Learning Management for Enhancing Innovator and Spirituality of Intangible Cultural Heritage Using Artificial Intelligence for Pre-service Teachers in Thai Society. Research Methodology: This study employed a mixed-methods approach. Qualitative data were collected through documentary research to synthesise information on Khao Moo Daeng for board game development. Data collection involved (1) an evaluation of the board game’s quality by nine experts through educational connoisseurship, with quantitative data analysed using mean and standard deviation, and (2) narrative reflections from 28 second-year pre-service teachers majoring in Thai Language, Faculty of Education, Silpakorn University, during the 2025 academic year, which were examined using qualitative content analysis.*

## Research Finding

*The findings revealed that (1) the developed board game, titled “Let’s Help Grandpa Find the Recipe of Khao Moo Daeng”, successfully integrated intangible cultural heritage into an engaging game-based learning format, and (2) the board game was rated at the highest quality level by experts (mean = 4.87, SD = 0.14). Likewise, all the students reported greater awareness of intangible cultural heritage after playing the game. The board game was also found to promote Thai language learning and demonstrated its potential as an innovative instructional model for pre-service teachers. Its interactive format fosters an understanding of cultural heritage.*

*Overall, the findings indicate that board games are a highly effective medium for disseminating intangible cultural heritage. Therefore, future research should implement such games across diverse educational settings, including primary, secondary, and higher education, to obtain broader quantitative data on cultural perception. Furthermore, it is recommended that other domains of intangible cultural heritage be developed and tested through various game-based innovations on a larger scale in the future.*

**Keywords:** Intangible Cultural Heritage, Khao Moo Daeng, Board Game, Game-Based Learning, Educational Innovation, Cultural Transmission

## Introduction

Intangible Cultural Heritage (ICH) comprises unique cultural elements that shape the identity of certain communities and are passed down from one generation to another to the present day. Cultural heritage is a constituent element of humanity that integrates cultural values ranging from development to creativity to wisdom, which play an essential role in the sustainability and continuity of all human societies. In addition, intangible cultural heritage reflects community identities and gives people a sense of pride in the cultural traditions they inherit from generation to generation.

Research reveals that while the local heritage you resist might be very important to the society you are part of, many communities have only elementary knowledge or awareness of their cultural heritage. For instance, youth participants reported understanding intangible cultural heritage only at a basic level, as something with meaning, origin, and significance (in some contexts). One respondent argued that cultural heritage is the transmission of traditions and practices from ancestors to their descendants within families and communities, as well as society at large. These traditions, cultural practices, and characteristics should be carried forward.

*“I know a little because I grew up with my grandmother and saw some aspects of cultural heritage in her everyday life. It’s traditions of ways of life, beliefs, and practices that are passed from generation to generation and help inform how people live in society.”*

*(Questionnaire respondent B, September 28, 2025)*

These responses indicate that young people’s understanding of intangible cultural heritage is mostly at an elemental level and that most see it as a component of daily life. Importantly, these perspectives do not encourage active participation in cultural preservation or transmission. To tackle this challenge, a policy allows relevant Thai agencies, especially the Ministry of Culture, to register intangible cultural heritage items annually. It is an initiative to raise public awareness so that elements of cultural heritage are preserved and do not disappear. Therefore, promoting youth awareness of intangible cultural heritage is a priority that society should recognise, as young people are the primary force in inheriting cultural traditions. This aligns with the research by [Marpraneet and Marpraneet \(2014\)](#), which emphasises that communities and relevant agencies should collaborate to encourage youth learning to preserve intangible cultural heritage for the future.

Nakhon Pathom Province in Thailand is an example of a region that possesses significant and distinctive intangible cultural heritage. There are many examples, including Khao Moo Daeng (red pork on rice), an everyday single-dish meal that has been classified as a local specialty of Nakhon Pathom for decades. The original methods of making this dish have been handed down from generation to generation, but the more traditional preparation is

becoming difficult to preserve as fewer and fewer people prepare this dish. Accordingly, in 2005, Nakhon Pathom Province submitted a proposal to register Khao Moo Daeng of Nakhon Pathom as a national intangible cultural heritage item under knowledge and practices concerning nature and the universe. Later, in 2023, the Department of Cultural Promotion officially stated that Khao Moo Daeng of Nakhon Pathom was elevated to national intangible cultural heritage status ([Department of Cultural Promotion, 2024](#))

Intangible cultural heritage can be disseminated in various ways. One potential approach is to leverage cultural heritage within educational environments through various pedagogical practices (e.g. integrating relevant content into classroom learning and inviting experts to visit students in class). Another innovative method is to convert cultural heritage data into educational tools. The first type of innovation developed and made a name among younger generations, which we see in use in modern educational platforms, is board games. They are a great way to learn and test new skills in an interactive setting where learners can acquire knowledge while playing fun games. Increasing research from around the globe has shown that combining the concept of board games with cultural heritage can improve the learning experience. For example, [Correnti et al. \(2024\)](#) created a board game based on the Monopoly called Silkroadopoly, in which she narrates Marco Polo’s journey along the Silk Road, from vocabulary to rich descriptions. The game uses QR code technology to link players to historical facts and to contextualise narratives. The study findings indicate that board games are effective tools for promoting learner engagement and creatively conveying knowledge related to the cultural heritage. These results also indicate that such approaches hold potential for the future development of innovative play-based learning. In a similar vein, [Malegiannaki et al. \(2021\)](#) created a board game that narrates stories to foster both children’s and adults’ engagement with culture. Their research examined how board games can be used to transmit knowledge of other aspects of cultural heritage to children. The findings showed that storytelling-based board games are an excellent means of generating fun learning

experiences and enhancing cultural literacy, as well as fostering emotional attachment to cultural heritage.

Despite the proven effectiveness of board games in cultural education globally, such innovative approaches remain significantly underutilised in the specific context of Nakhon Pathom Province. While the history and significance of Khao Moo Daeng have been extensively documented in academic papers and articles, there is a lack of transformation into interactive educational tools such as games. Recognising this gap in cultural transmission, the researcher is interested in developing a board game based on Nakhon Pathom's Khao Moo Daeng to provide a more engaging and fun learning experience for younger generations.

## Review of Literature

### Concepts of Intangible Cultural Heritage

Intangible Cultural Heritage (ICH) lacks a physical form and includes vital knowledge from communities that clarifies their identity. In the text of the Convention for the Safeguarding of the Intangible Cultural Heritage (CSICH), Article 2, according to UNESCO (2024), “intangible cultural heritage” means:

*Intangible cultural heritage refers to the practices, representations, expressions, knowledge, and skills, as well as the instruments, objects, artefacts, and cultural spaces associated therewith, that communities, groups, and, in some cases, individuals recognise as part of their cultural heritage. This intangible cultural heritage is passed down from generation to generation and is constantly recreated by communities and groups in response to their environment, interactions with nature, and history, providing them with a sense of identity and continuity.*

In conclusion, intangible cultural heritage is closely related to how people live together in society. UNESCO (2024) defines five domains of manifestations of intangible cultural heritage: 1) oral traditions and expressions, including language as a vehicle of the intangible cultural heritage; 2) performing arts; 3) social practices, rituals, and festive events; 4) knowledge and practices concerning nature and the universe; and 5) traditional craftsmanship.

### Concepts of Board Games

Board games are tabletop games in which players compete against each other on a board, governed by rules. Titled players use physical game components, such as boards, cards, dice, and tokens. Players' actions, developed through the game's rules and interactions with other players, result in the game's outcome. ([Bayeck, 2020](#); [Katsantonis, 2025](#); [Sousa et al., 2023](#)).

Board games are categorised based on their objectives and structural characteristics. Standard game stratification revolves around the social aspects of play. According to [Pinedo et al. \(2022\)](#), board games can be categorised into three types: 1) competitive, 2) cooperative, and 3) collaborative. Within these genres, cooperative games focus on teamwork, collaborative problem-solving and player engagement. Consequently, cooperative games have gained increasing interest for educational purposes ([Katsantonis, 2025](#)). Another classification method focuses on the game's goal. Therefore, they can be classified into two types: 1) entertainment games and 2) serious games. Serious games are designed primarily for education, skill development, or training rather than entertainment ([Kara, 2021](#)). Serious board games, in particular, have gained increasing popularity in educational contexts and training environments, as they offer an opportunity to structure learning objectives without compromising the gamification aspect ([Katsantonis, 2025](#)).

### Research Objectives

1. To develop a board game-based instructional innovation using intangible cultural heritage as the core content.
2. To examine the quality of the board game developed based on intangible cultural heritage.

### Research Methodology

This study employed a mixed-method approach. Qualitative data were collected through documentary research on Khao Moo Daeng was conducted in order to synthesise relevant information for the development of the board game. Data were collected from two main sources: 1) the evaluation of the board game's quality by experts and 2) written narrative reflections from board game players. The

quantitative data obtained from the expert evaluation were analysed using the mean and standard deviation, while qualitative comments and player reflections were analysed using content analysis. The research procedures were as follows:

**Documentary Study:** Relevant documents and sources related to the Khao Moo Daeng intangible cultural heritage item of Nakhon Pathom Province were reviewed. The synthesised information was then used as the foundation for designing and developing the board game.

**Board game development:** This board game was created for the content of Khao Moo Daeng, reflecting the ingredients and the process of making Khao Moo Daeng.

**Expert Review of Board Game Quality:** Nine experts conducted a connoisseurship-based evaluation process to review the developed board game. The evaluation results were analysed and summarised as mean and standard deviation. Content analysis of the other expert comments provided further insights for improvement.

**Pilot Testing with Students:** The board game was modified based on the expert evaluation and tested with 28 second-year pre-service teachers majoring in Thai Language, Faculty of Education, Silpakorn University, who were enrolled in a Folklore course in the 2025 academic year. The participants were selected using cluster sampling from an intact class, which was considered appropriate for this pilot study, as they were already grouped according to the context of the course offered, and random assignment at the individual level was not feasible within the instructional setting. Students then wrote narrative reflections about their experiences after playing the board game, and content analysis was used to analyse the data collected.

**Data Interpretation and Discussion:** The results from the expert evaluation, as well as those from the try-out for students, were synthesised, interpreted, and collected into data with regard to present and discuss the findings of this research.

## Research Findings

### 1. Findings of Developing a Board Game–Based Instructional Innovation Using Intangible Cultural Heritage

#### *Findings of Studying and Synthesizing the Intangible Cultural Heritage of Khao Moo Daeng for Board Game Development*

Khao Moo Daeng, originally a popular single-dish meal, was conceptually transformed into an interactive learning experience through a board game. The main content of the Khao Moo Daeng game board was synthesised from the ingredients and preparation processes. The component elements comprise: 1) red pork fixings, 2) sauce ingredients, 3) crispy pork components, and 4) Chinese sausage fixings. (Provincial Cultural Council of Nakhon Pathom, 2024).

However, regarding the ingredient used to create the red colour of the marinated pork, the researcher made a modification during the development of the boardgame. The researcher replaced the original ingredient, “red food coloring”, with red yeast rice (Angkak). This is grounded in the literature and related studies that reveal that angkak is produced by the natural fermentation of rice, yielding a red pigment with health benefits, and has long been used in typical Asian cuisine. For instance, [Chaikulsareewath and Tangprasertpong \(2011\)](#) illustrated that natural food colourings are safer than synthetic colourings. Red yeast rice pigment is a fermented product widely used in East Asian cuisine, such as in China, Taiwan, Malaysia, Hong Kong, and Thailand. It is widely used in food preparations such as fermented bean curd, sausages, fish products, and pork dishes.

#### *Findings of Developing the Board Game–Based Instructional Innovation*

The instructional innovation developed in this study is a serious board game, meaning it is designed not only for entertainment but primarily to promote learning about intangible cultural heritage while also developing players’ Thai-language skills. The board game that the researchers developed is called “let us Help Grandfather Find the Khao Moo Daeng Recipe! This game is inspired by the intangible cultural heritage of Nakhon Pathom Province, Thailand. This

information about the dish was used as a fundamental aspect in the design of the board game, both giving it meaning and reflecting the most representative aspects of its preparation. The details of the board game are as follows:

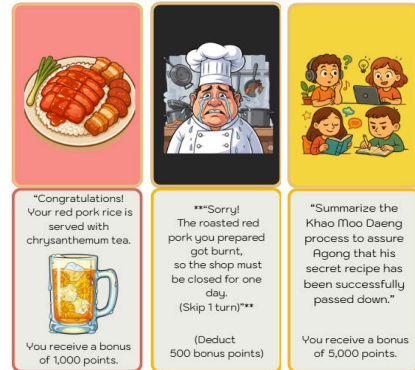
1. The Storyline of the game is about a grandfather (A-Kong) who used to own a famous Khao Moo Daeng restaurant. He closed his restaurant due to health problems, and the recipe for this special dish died with him. When he later wants to reopen the restaurant, he enlists his children and grandchildren to help him reacquire the lost recipes. Players set off on a quest to gather ingredients and recreate the recipe.

2. Board Game Components: This board game contains the following components: 1) The game board 2) The rulebook for game instructions and play, 3) A booklet of recipes: "A Grandfather's Secret Recipe" 4) Ingredient checklist notebook, 5) Bonus collection notebook, 6) Three types of cards: Khao Moo Daeng Card, Crying Chef Card (think of it like an action card), Skill Duel Card (special skill), 7) Tokens by player, and the last is a die.

3. The board game can be played individually or in groups, with group play encouraging social interaction and collaboration. The objective of the game is to collect all the required ingredients and complete the cooking process of Khao Moo Daeng according to the recipe before other players while earning additional points through special quests.

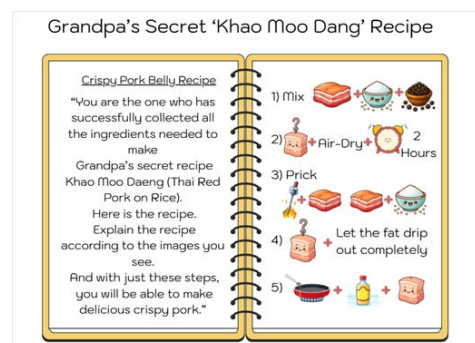
Players draw different cards when they land on designated spaces on the board, including Khao Moo Daeng Cards and Crying Chef Cards. Khao Moo Daeng Cards provide bonus points or rewards, whereas Crying Chef Cards introduce challenges that may result in point deductions or missed turns. When a player claims to have completed a dish, the game enters a skill challenge phase using Skill Duel Cards. Players must perform tasks related to Thai language skills, such as reading, writing, listening, speaking, grammar, and cultural knowledge, to earn bonus points. Successful completion results in full points, whereas incorrect completion yields half of the assigned points. For example, one task requires players to orally summarize the cooking process of Khao Moo Daeng. To successfully complete this task,

players must understand the cooking procedures they encounter during gameplay. Therefore, Skill Duel Cards not only create engaging challenges but also reinforce learners' knowledge of intangible cultural heritage.



**Figures 1-3 Examples of the Khao Moo Daeng Card, Crying Chef Card, and Skill Duel Card**

4. "Grandfather's Secret Recipe" Mechanism: The production procedure of Khao Moo Daeng has been designed as an exclusive game component called "Grandfather's Secret Recipe" Grandfather's Secret Recipe. This includes a recipe notebook with instructions for preparing the various components of Khao Moo Daeng. Rather than simply listing the cooking steps, the cooking methods are conveyed with words and pictorial markers. In this game, players arrange and interpret these keywords and images to piece together the correct sequence of steps for preparing each component of the dish: red pork, crispy pork, Chinese sausage, and sauce. This design promotes the development of practice in communicating and collaborating while allowing players to convey how Khao Moo Daeng is prepared.



**Figure 4 Examples of "Grandfather's Secret Recipe"**

The example of “Grandfather’s Secret Recipe” shown above illustrates how to prepare crispy pork. However, as the recipe is presented as a “secret recipe”, the steps are not directly explained. Instead, the researcher developed the recipe based on inspiration from traditional Thai manuals, including medical texts, culinary manuals and herbal medicine manuscripts. Many traditional texts deployed riddles or coded expressions to serve various ends, including the preservation of specialised knowledge and (for example) safeguarding secret formulas. In a study conducted by Pratoomrat et al. (2021), which examined traditional healing practices among ethnic Thai communities in Northeastern Thailand, the authors found that riddles could be used to conceal information such as disease names, herbal ingredients, medicinal formulas, preparation methods, and treatment processes. Naming herbs in riddle form served to keep specialised knowledge within a certain group of people and to train apprentices in analytical thinking and creative problem-solving. Moreover, riddles proved crucial for safeguarding pharmaceutical intellectual property as traditional medical knowledge travelled along ethnic lines.

Inspired by this concept, riddle-based knowledge transmission was incorporated into the design of Grandfather’s Secret Recipe. As part of the board game, players must work together to interpret and

decode which keyword, image, or symbol in the recipe notebook corresponds to each step in making crispy pork. Taking the example in Figure 4, players need to correctly interpret the cooking steps together as follows: 1) Mix the pork belly with salt and pepper, 2) Hang the seasoned pork belly on a metal hook for air-dry for 2 hours, 3) Prick the pork skin thoroughly with a heated metal tool, then coat it with salt again, 4) hang it so that grease can overflow completely, and 5) heat oil up in pan so that fried to crispness. Through these five steps, crispy pork, an essential component of Khao Moo Daeng, is produced. During gameplay, players must rely on communication, observation, and teamwork to interpret and explain the cooking processes. Consequently, this activity allows players to simultaneously develop Thai language, social interaction, creativity, and collaborative problem-solving skills while also enhancing their understanding of intangible cultural heritage.

## 2. Findings of the Board Game Quality Evaluation Based on Intangible Cultural Heritage Expert Evaluation of the Board Game Quality

The board game was evaluated using a connoisseurship-based expert review involving nine experts in the field. The evaluation results are presented in Table 1.

**Table 1 Evaluation Results of the Board Game Quality**

Quality Assessment Checklist	Evaluation		
	Mean	SD.	Level
1. The innovation demonstrates the integration of intangible cultural heritage into its design	4.78	0.44	highest
2. The innovation reflects the unique identity of intangible cultural heritage	4.89	0.33	highest
3. The innovation represents a novel and creative contribution	4.67	0.50	highest
4. The innovation is engaging and effectively promotes learning outcomes	5.00	0.00	highest
5. This innovation serves as a model for pre-service teachers in creating educational tools that integrate cultural heritage with artificial intelligence	5.00	0.00	highest
<b>Average quality score</b>	<b>4.87</b>	<b>0.14</b>	<b>highest</b>

The results indicate that the board game-based instructional innovation, “Let’s Help Grandfather Find the Khao Moo Daeng Recipe!”, achieved an overall quality rating at the highest level (mean=4.87, SD=0.14). Overall, the expert evaluation results suggest that the board game effectively integrates cultural heritage content with educational innovation while promoting multiple dimensions

of learning, including cultural knowledge, language development, and social skills

### Players’ Reflections on the Board Game

In addition to the expert feedback described above, the researcher implemented the Thai-language instructional innovation, the cultural heritage board game “Let’s Help Grandfather Find the Khao Moo

Daeng Recipe!” in classroom teaching. The results show that all 28 Pre-service Teachers expressed positive opinions about the board game. Overall, the students indicated that the board game helped them gain a deeper understanding of intangible cultural heritage and supported the development of Thai-language skills through gameplay. Furthermore, the board game was considered a valuable example of instructional innovation for pre-service teachers’ training. Students also noted that presenting cultural heritage through a board game made the learning experience more enjoyable and engaging, encouraging them to become more interested in and appreciative of it. Examples of students’ comments are as follows:

*“This Khao Moo Daeng board game is very enjoyable. I like that we can play and work together with friends to solve problems. I especially enjoyed the part where we had to explain how to prepare the dish using the ingredients we collected and the visual cues provided. It was exciting to see whether our explanation was correct, and everyone helped each other explain the steps.” (Questionnaire respondent C, December 7, 2025)*

*“The Thai-language skill challenge at the end of the game was very exciting. We were curious about the tasks we would receive, and everyone helped each other complete the challenge. The game is enjoyable and educational. This helped us understand that Khao Moo Daeng is an important cultural heritage of Nakhon Pathom Province. It also gave us ideas for developing teaching materials that we can use when teaching students in the future.” (Questionnaire respondent E, December 7, 2025)*

The participants’ reflections clearly demonstrated that the board game offers value beyond entertainment. In addition to promoting enjoyment, games encourage social interaction and collaborative learning. In this study, the board game was implemented with pre-service teachers, which helped inspire creative ideas for developing instructional innovations that incorporate the intangible cultural heritage. Furthermore, several participants commented that the board game was visually appealing and had attractive illustrations. This was largely due to the researcher’s use of artificial intelligence (AI) tools to generate visual images from specific prompts. These findings

suggest that when artificial intelligence is used responsibly as a supportive tool, while considering issues of accuracy and ethical use of AI-generated data, it can effectively assist educators in designing creative and innovative learning materials.

## Discussion

The results of this study show that the transmission of intangible cultural heritage cannot be limited to preservation work alone but can also be extended through creative re-interpretation and innovative forms of presentation. Innovative learning rooted in cultural heritage that appeals to contemporary audiences is an effective way to promote cultural awareness and involvement. Here are three types of innovations that can be implemented in both formal educational settings and informal learning environments: Using cultural heritage as an innovative learning medium can foster awareness, understanding, and emotional connection, thereby enhancing participation in the preservation and transmission of cultural heritage. At the international level, there is growing interest in treating intangible heritage as cultural capital for developing cognitive innovation. Innovative learning tools that present cultural heritage are seen as a successful way to engage younger generations. Similarly, [Malegiannaki et al. \(2021\)](#) developed a storytelling-based board game to increase cultural interaction across generations (i.e. children and adults). Their study focused on whether board games are an effective medium for transmitting cultural heritage knowledge. The results showed that immersive board games with narrative elements can provide enjoyment and offer a way to learn and understand culture, fostering a deeper emotional connection to cultural heritage.

In addition to preserving culture, board games can provide educational benefits for players. Playing board games can provide multiple dimensions of learning, including cognitive, social, and higher-order thinking. According to [Bayeck \(2020\)](#), board games offer a learning space where content knowledge is integrated with higher-order thinking skills, including logical reasoning, strategy formation, memory, and problem-solving. In addition, [Pinedo et al. \(2022\)](#) described that board games are also great for social skills. More specifically, cooperative board

games extend the concept of teamwork to facilitate communication, shared decision-making, and interactive engagement among players (Katsantonis 2025). Sousa et al. (2023) stress that board games can promote collaboration, communication, creativity, empathy, and self-confidence. In addition, board games have a positive impact on learners' motivation and engagement while offering a flexible and fun learning environment where learners can practice trial-and-error learning without risk (Pinedo et al., 2022; Sousa et al., 2023), which is crucial for providing rich learning experiences. In the context of the present study, the board game developed from Khao Moo Daeng's cultural heritage not only promoted knowledge of intangible cultural heritage but also supported the development of Thai-language skills and social interaction among players. These findings reinforce the potential of game-based learning innovations as effective tools for integrating cultural heritage education into interactive and engaging learning experiences.

### Suggestions

1. Future studies should focus on developing board games that integrate artificial intelligence and intangible cultural heritage in diverse formats and implement them across broader educational contexts and larger, more diverse samples to examine their effectiveness in enhancing cultural perception and learner development.
2. Future research should also explore the development of other AI-supported educational technologies, such as virtual reality, augmented reality, and interactive digital platforms, that integrate intangible cultural heritage and extend their application beyond the classroom to support cultural preservation and innovative learning experiences.

### Conclusion

This study demonstrated that transforming intangible cultural heritage, specifically Khao Moo Daeng, into board game-based learning innovation can effectively enhance learners' awareness and understanding of cultural heritage. Although Khao Moo Daeng is a well-known and widely consumed local dish in Nakhon Pathom Province, the cultural

knowledge embedded in its preparation and significance is often overlooked in everyday life. The findings of this study indicate that presenting familiar cultural practices in an unfamiliar and engaging format, such as a board game, can encourage learners to rediscover and appreciate intangible cultural heritage.

The developed board game successfully integrated cultural content into an interactive learning experience and was rated as the highest quality by experts. In addition, the game promoted Thai-language learning and demonstrated its potential as an innovative instructional model for pre-service teachers. Overall, the findings suggest that board games are an effective medium for the dissemination and transmission of intangible cultural heritage, as they allow cultural knowledge to be presented in ways that are engaging, accessible, and meaningful to contemporary learners while preserving core cultural values.

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