THE EFFECTS OF A LEARNING MANAGEMENT MODEL USING DESIGN THINKING AND COMMUNITY-BASED LEARNING TO ENHANCE LOCAL VISUAL ART DESIGN IN LINE WITH THE CREATIVE ECONOMY CONCEPT AMONG HIGH SCHOOL STUDENTS

Saran Suwan and Chanasith Sithsungnoen*

Faculty of Education, Silpakorn University, Thailand

ABSTRACT

Corresponding author:
Saran Suwan
saransuwan@gmail.com

This research aims to 1) develop and evaluate the quality of a learning management model using design thinking and community-based learning to enhance local visual art design in line with the creative economy concept among high school students, 2) study the visual art designing skill process, 3) study local art projects following the creative economy concept, and 4) study students' opinions towards the learning management model and the value of art to the community. Purposive sampling was conducted for this research, consisting of 16 high school students from Koh Kret Creative Art Club at a secondary school in Nonthaburi province in the academic year 2023. The method used in this research is research and development (R&D). Research instruments included: 1) a learning management model, 2) four lesson plans, 3) evaluation forms for the visual art design skill process, 4) evaluation forms for local art projects following the creative economy concept, and 5) questionnaires for student opinions. The data analysis was conducted by using mean (*M*), standard deviation (*SD*), and content analysis. The results show that the learning management model consisted of five components: (1) principles, (2) objectives, (3) a learning process consisting of four stages as follows: 1) Perceive (P), which includes 1.1 Community Planning Survey (CPS), 1.2 Community Learning (CL), and 1.3 Community Reflection (CR), 2) Producing Ideas (P), 3) Prototype (P), and 4) Proof (P) which includes Community Evaluation (CE). (4) measurement and evaluation, and (5) success conditions. The learning management model was evaluated by experts and it was found that, 1) the appropriateness was at the highest level (*M* = 4.69, *SD* = 0.45), 2) the visual art design skill process reflected a very good level (*M* = 2.61, *SD* = 0.48), 3) local art projects following the creative economy concept reflected a very good level (*M* = 2.55, *SD* = 0.39), and 4) student opinions toward the learning management model and the value of art in the community were at the highest level (*M* = 4.66, *SD* = 0.56).

Keywords: Design thinking; community-based learning; local visual art designing; creative economy

1. INTRODUCTION

Learning to create innovation stems aimed at generating knowledge, with a focus on innovation, wisdom, technology, and creativity. This type of learning benefits individuals by enhancing their skills, personal characteristics, and career performance, while also enabling them to live harmoniously with others in society. The National Strategy (2018–2037) aims to transform the social values and culture of Thai people to foster individuals who live virtuously according to the Thai 'way of life' and are mindful of others in society. The National Strategy on Competitiveness Enhancement focuses on three main concepts: 1) 'Learning from the past for further development,' 2) 'Adjusting the present,' and 3) 'Creating new future values,' with an emphasis on the country's economic foundations, identity, culture, traditions, and way of life. It is important to incorporate advanced technologies and innovations to remain current with today's economic and societal context. Similarly, the Thirteenth National Economic and Social Development Plan (2023–2027) outlines the country's development direction to transform Thailand into 'a progressive society with sustainable economic growth.' Additionally, the plan aims to create a society that adapts to global dynamics and supports Thai citizens in fully developing themselves, based on environmental sustainability and economic improvement through innovations that generate value. It aligns with the National Education Plan (2017–2036), which focuses on equipping students with the characteristics and learning skills needed for the 21st century (3Rs8Cs). The objectives of this plan are to enhance national competency, promote interdisciplinary learning processes that improve critical thinking and innovation, and thereby increase overall value. It aims to foster the production and development of specialized and expert individuals. Furthermore, it targets the creation of knowledge and innovation that produce valuable products and boost economic value. The Creative Economy introduces a new approach to revitalizing and adding meaning to production industries and services, creating value from unique products. This concept emphasizes economic growth driven by knowledge, education, creativity, and intellectual property, connecting cultural foundations, societal accumulation, and new innovations and technologies (Howkins, 2001). Therefore, using the community as a foundation for national development is a key aspect of the national strategies, which seek to advance the country by building on its social and cultural values. This approach emphasizes the knowledge and wisdom of citizens, pride in their local heritage, and the support of educational institutions. The diverse values of society and culture can be elevated to boost the creative economy and improve the local economy.

This concept aligns with the Basic Education Core Curriculum A.D. 2008, which promotes educational decentralization to enhance engagement between local communities and educational institutions, ensuring the curriculum meets local conditions and needs. To support community strength, learning processes are conducted within the community. The visual arts subject, under the art learning strand, establishes learning standards that emphasize the importance of learner development. Consequently, students are nurtured to be creative, appreciate aesthetics, express their imagination through visual artworks, develop self-esteem, recognize the value of artworks, and understand the social values of both culture and local wisdom.

Currently, the visual arts lesson on local wisdom and culture is scheduled as the final unit of the subject. As a result, the content and activities related to local wisdom and culture, Thai arts, national visual arts, and local arts have been reduced to mere theoretical study, rather than practical learning. Students perceive this lesson as distant from their reality and fail to recognize the importance of collaboration in developing and appreciating local wisdom and culture. Moreover, most practical activities focus on the imitation of originals, which is only an initial step and does not promote creativity, design, and reproduction. Students are not trained to conduct research and learn independently, and they lack opportunities to express their thoughts. They are unable to find solutions to problems or apply acquired knowledge appropriately. This reflects the findings of the 2022 PISA assessment on creative thinking, where OECD member countries had an average score of 33, while Thailand's average score was 21. This indicates that Thai students still need further development in creative thinking so they can adapt to new ideas and innovations. This is consistent with the research by Kaewto (2021), who developed an art activity to enhance the creativity and artistic skills of Grade 12 students. The study emphasized improving students' creative thinking abilities, innovation creation, the use of more advanced and accessible media technology, and innovation that meets the country's needs. The research found that students significantly improved their academic performance at the 0.01 level of statistical significance. In addition, the development of local wisdom requires creativity and community engagement. Phinla (2017) supports this view, stating that selecting content related to local cultural wisdom helps students build a meaningful connection with their community, thereby enhancing their learning experience. If learning primarily occurs in the classroom, students may miss opportunities for self-discovery, participation, problem-solving, and the preservation of local wisdom. This is consistent with the research of Makkhaw (2022), who studied the development of a paper-based art activity using a community-based approach to enhance the appreciation of folk art among Grade 9 students. The study found that students were able to apply knowledge

from folk art to creatively develop their own artworks. The research results indicated that their level of appreciation for folk art was significantly higher after using the activity package, at the statistical significance level of .05. Therefore, instruction should emphasize critical thinking and active participation with communities. Local wisdom concepts should be applied creatively. This approach involves a design thinking process that fosters innovative thinking. It provides a conceptual framework or mindset that differs from the traditional process, enhancing opportunities for students to design their ideas. The principles of design thinking include a human-centered approach, collaboration, and action (IDEO Toolkit, 2012). Additionally, community-based learning involves experiential learning derived from real-world experiences. Students gain an understanding of the community's problems, needs, and characteristics to acquire knowledge through various methods. They actively engage with the community, gaining an appreciation for diversity and equality, which helps prepare them for future work (Rittikoop, 2018). This approach also emphasizes learning by doing and managing knowledge related to concepts, content, processes, and outcomes.

Based on the background and rationale, the research is interested in enhancing high school students' ability to design local visual arts in line with the creative economy concept. This will be achieved through a learning management model that incorporates design thinking and community-based learning. The objectives are to equip students with design process skills and foster creativity in their visual arts work. Creativity and innovation are essential skills for creating new, valuable, and beneficial outcomes. Thus, the process relies on both critical thinking and effective working procedures. Instruction should follow a process that includes critical thinking, design, decision-making, and problem-solving, resulting in creative and impactful artworks. The researchers have developed a learning management model that integrates design thinking with community-based learning, fostering a thinking process aimed at creating innovative and creative works. Additionally, process skills are enhanced through the integration of knowledge, creativity, intellectual property, and innovation with technology, all while incorporating diverse cultures, environments, and the Thai way of life. Stories and content related to local wisdom and culture are highlighted, giving each work a unique identity. Students will explore communities through community-based learning, gathering data, reflecting on their thoughts, and using this information to design their local visual arts projects in alignment with the creative economy concept. Furthermore, students actively participate and feel a sense of ownership, enabling them to reproduce local wisdom, create, and increase the worth and value of their work.

2. THE PURPOSES OF THIS STUDY

The research objectives are as follows:

2.1 To develop and evaluate the quality of a learning management model using design thinking combined with community-based learning to enhance local visual art design according to the creative economy concept among high school students.

2.2 To study the visual art design skill development process of high school students taught through the learning management model using design thinking and community-based learning.

2.3 To study local art projects following the creative economy concept implemented by high school students taught through the learning management model using design thinking and community-based learning.

2.4 To study students' opinions toward the learning management model and the perceived value of art within the community.

3. MATERIALS AND METHODS

The research employed the research and development (R&D) method. Data were collected using a mixed-methods approach, consisting of three phases as follows:

3.1 Phase 1 (Development: D1): Developing a learning management model

Step 1: Synthesize the fundamental data for developing a learning management model and create the research instruments, including: 1) a learning management model 2) four lesson plans 3) evaluation forms for the visual art design skill process, 4) evaluation forms for local art projects following the creative economy concept, and 5) questionnaires to gather student opinions.

Step 2: Assess the quality of the learning management model and other research instruments through a focus group discussion (FGD) with seven experts. The tools used to evaluate the quality of the model and instruments included: 1) a group discussion guide with five open-ended questions, and 2) an evaluation form using a five-point Likert scale to assess the quality of the learning management model and research

instruments. It is determined by the mean score, categorized into five levels: Very high (4.50–5.00), High (3.50–4.49), Moderate (2.50–3.49), Low (1.50–2.49), and Lowest (1.00–1.49). The data were analyzed to calculate the mean (*M*), standard deviation (*SD*), and content analysis.

3.2 Phase 2 (Research: R2): Performing a pilot study using a learning management model

The target group for this research consisted of students in grades 10–12 (Mathayom 4–6) studying in the second semester of the 2023 academic year at Panyapiwat Institute of Management Demonstration School, Nonthaburi province. The target group was selected using purposive sampling, comprising students who enrolled in the Koh Kret Creative Arts Club, totaling 16 students from one classroom. These students had the following characteristics: an interest in art and design, an appreciation for local wisdom, the ability to conduct fieldwork in communities and learning sources, and readiness in terms of art materials and time to carry out practical activities.

The experimental design followed the one-shot case study model, conducted with a single target group. The learning activities were implemented over a period of 18 weeks, with an additional 2 weeks allocated for post-learning effectiveness evaluation, at a rate of 1 hour per week. The total duration of the experiment was 20 hours.

3.3 Phase 3 (Development: D2): Evaluating the effectiveness of the learning management model

The effectiveness of the learning management model was evaluated after its implementation. This evaluation consisted of: 1) assessing the visual arts design process skills, 2) evaluating local visual arts products based on the creative economy concept, and 3) assessing students' opinions on the use of the learning management model and their appreciation of art within the community. Data analysis was conducted by calculating the mean (*M*), standard deviation (*SD*), and performing content analysis.

4. RESULTS

4.1 Results of the development and quality assessment of a learning management model using design thinking with community-based learning to enhance local visual arts design following the creative economy concept for high school students

4.1.1 Learning management model

The components of the learning management model developed by the researchers consisted of five elements: 1) Principles, 2) Objectives, 3) Learning Process, 4) Measurement and Evaluation, and 5) Success Conditions. The third component, the Learning Process, comprised four stages: Stage 1—Perceive, which includes 1.1 Community Planning Survey, 1.2 Community Learning, 1.3 Community Reflection; Stage 2—Producing Ideas; Stage 3—Prototyping; and Stage 4—Proof, which includes Community Evaluation. The details are as follows:

1) Principles

The learning management model integrates design thinking with community-based learning. This approach emphasizes enabling students to use the design thinking process to understand and study the needs of target groups. Students interact and engage with the community by exploring local ways of life and indigenous wisdom. They then apply the knowledge and inspiration gained to create their own visual art through hands-on practice. The goal is for students to develop skills in designing local visual art using cultural capital to create distinctive and unique works that align with the concept of the creative economy. This process adds value and fosters appreciation of their role and participation within their local community.

2) Objectives

2.1 To enhance the skills of high school students in the design process of visual art.

2.2 To promote the design of local visual art based on the concept of the creative economy among high school students.

2.3 To study students' opinions on the use of the learning management model and their appreciation of art and community.

3) Learning Process

The learning process consists of four stages, with the following details:

Stage 1: Perceive (P): This stage involves understanding the design based on needs by setting goals, identifying areas of interest, studying and collecting data to guide creative design projects, and determining methods to achieve objectives. It includes 3 steps of community-based learning management:

1.1 Community Planning Survey (CPS): Preparing and planning for data collection in the community. Learners define topics of interest, objectives, and steps for community field study. They create community survey tools and learning record forms.

       1.2 Community Learning (CL): Learners conduct field surveys of the community, lifestyles, and local wisdom. They study, exchange knowledge, and participate in activities with the community and local experts. They collect data on predetermined topics or areas of interest from the community, with the instructor facilitating the community learning process.

       1.3 Community Reflection (CR): Learners reflect on their experiences and learning gained from the community field study. They present data and engage in discussions with other learners to create conceptual frameworks, creative formats, and designs.

       Stage 2: Producing Ideas (P): This is the brainstorming stage in which learners generate ideas related to perspectives, methods, or approaches that align with their needs. They define conceptual frameworks and create preliminary sketches of their work to demonstrate feasibility before proceeding to develop a prototype for their creative work.

       Stage 3: Prototype (P): This stage involves creating a prototype or tangible piece of work. After designing sketches, learners engage in the visual arts creative process, developing their work and addressing problems that arise during the creation process.

       Stage 4: Proof (P): This is the stage for presenting and exhibiting prototype works. It involves testing understanding and functional efficiency, sharing, and learning together. Learners reflect on their own work, and teachers provide suggestions for further development of design ideas. This stage includes one step of the community-based learning management process:

       Community Evaluation (CE): This involves reviewing learners' work with input from both teachers and the community, who provide feedback and suggestions. Learning outcomes are assessed through authentic assessment, with the aim of further development and improvement.

       4) Measurement and Evaluation

       4.1 Assessing students' skills in the visual art design process

       4.2 Evaluating the outcomes of students' local visual art design based on the creative economy concept

       4.3 Evaluating students' opinions on the use of the learning management model and their appreciation of art and the community

       5) Success Conditions

       5.1 Support from administrators and parents in implementing teaching and learning activities, especially in providing funding, materials, equipment, media, and technology

       5.2 Teachers must understand the learning management model and integrate it with the subject content to achieve outcomes appropriate to the learners and aligned with the curriculum. They should be able to design learning activities, facilitate student learning, and manage the classroom effectively to ensure students' success.

       5.3 Students must be motivated and enthusiastic in their work, with clear time constraints and step-by-step planning. They should have freedom in thinking, apply their own learning processes, and be confident in expressing themselves to engage in creative interactions and knowledge sharing with others.

       5.4 Community participation in learning management by sharing and transmitting local wisdom

       5.5 Learning sources and communities must be ready to support learning, providing spaces for artistic and creative learning experiences.

       The quality assessment results of the learning management model by 7 experts were shown in Table 1.

Table 1: Results of evaluating the appropriateness of the learning management model

Elements of model	*M*	*SD*	Result
1. Principles	4.42	0.53	High
2. Objectives	4.85	0.37	Very high
3. Learning Process	4.85	0.37	Very high
1. Perceive	4.71	0.48	Very high
1.1 Community Planning Survey	4.57	0.53	Very high
1.2 Community Learning	4.71	0.48	Very high
1.3 Community Reflection	4.71	0.48	Very high
2. Producing Ideas	4.71	0.48	Very high
3. Prototype	4.71	0.48	Very high
4. Proof	5.00	0.00	Very high
4.1 Community Evaluation	4.85	0.37	Very high
4. Measurement and Evaluation	4.42	0.78	High
5. Success Conditions	4.42	0.53	High
Overall	**4.69**	**0.45**	**Very high**

Table 1 shows that the overall quality assessment of the learning management model was at the highest level of appropriateness (M = 4.69, SD = 0.45). When considering individual aspects, it was found that Objectives and Learning Process were at the highest level of appropriateness (M = 4.85, SD = 0.37), followed by Principles and Success Conditions at a high level of appropriateness (M = 4.42, SD = 0.53), and lastly, Measurement and Evaluation at a high level of appropriateness (M = 4.42, SD = 0.78). This indicated that the overall learning management model developed was highly appropriate at the highest level, with the third component, Learning Process, as shown in Figure 1.
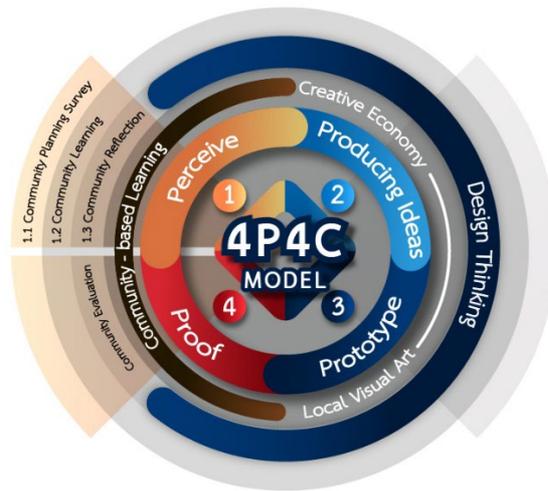

Figure 1: Learning management model by using design thinking with community-based learning

4.1.2 The lesson plans

The lesson plans consist of four plans: 1) Koh Kret Community, 2) Local Visual Arts Design, 3) Creating Prototype Works, and 4) Art Exhibition Inspired by Koh Kret. These plans cover a total of 20 hours of instruction, following the learning process outlined in the design thinking and community-based learning management model. The quality assessment results of the learning management plans conducted by seven experts showed that the overall appropriateness of all four plans was at the highest level (M = 4.67, SD = 0.49). When considering individual plans: The fourth plan had the highest level of appropriateness (M = 4.68, SD = 0.52), followed by the second plan (M = 4.47, SD = 0.45). The third plan ranked third (M = 4.65, SD = 0.49), and the first plan ranked last (M = 4.64, SD = 0.50). This indicated that the overall lesson plans were highly appropriate at the highest level, as shown in Table 2.

Table 2: The lesson plans using design thinking with a community-based learning approach

Plan	Learning process	Contents	Hours
1. Koh Kret Community	Stage 1: Perceive (P)	- Learning and Creativity - Local Wisdom of Koh Kret	1
	1.1 Community Planning Survey (CPS)	- The Tools for Community Survey	1
	1.2 Community Learning (CL)	- Community Field Study	3
	1.3 Community Reflection (CR)	- Reflection on Community Learning	1
2. Local Visual Arts Design	Stage 2: Producing Ideas (P):	- Conceptual Framework and Creative Economy Concepts - Principles of Visual Arts Design and Local Wisdom - Sketch Design	3
3. Creating Prototype Works	Stage 3: Prototype (P):	- Creating prototypes - Forms, Techniques, and Processes of Creating Visual Arts - Creative Work Practice	6
4. Art Exhibition Inspired by Koh Kret	Stage 4: Proof (P)	- Art Exhibition Organization	2
	Community Evaluation (CE)	- Presentation	1

4.1.3 The assessment form for visual arts design process skills consists of seven evaluation items: 1) Community Study Process, 2) Source of Inspiration, 3) Concept Creation, 4) Sketch Design, 5) Selection of Expressive Techniques, 6) Artwork Creation, and 7) Work Presentation. The assessment uses a 3-level rubric score, with quality criteria based on mean scores divided into four levels (Best, 1977) as follows: Very Good (2.51–3.00), Good (2.01–2.50), Fair (1.51–2.00), and Needs Improvement (1.00–1.50). The Index of Item Objective Congruence (IOC) results for the Visual Arts Design Process Skills Assessment Form show an overall congruence of 1.00 for all items.

4.1.4 The assessment form for local visual arts based on the creative economy concept includes five evaluation criteria: 1) Cultural Capital, 2) Creative Thinking Ability, 3) Local Visual Arts, 4) Added Value, and 5) Artistic Value. The evaluation uses a 3-level Rubric Score, and the quality is determined by the mean score, categorized into four levels: Very Good (2.51–3.00), Good (2.01–2.50), Fair (1.51–2.00), and Needs Improvement (1.00–1.50). The Index of Item Objective Congruence (IOC) for the assessment of local visual arts based on the creative economy concept was found to range from 0.80 to 1.00, indicating overall consistency.

4.1.5 The student opinion survey regarding the use of a learning management model and the appreciation of art within the community consists of two main aspects: The first aspect is the learning management model, which includes 1.1) Learning Content, 1.2) Learning Activities, 1.3) Learning Environment, 1.4) Assessment and Evaluation, and 1.5) Benefits Gained, with 2 items for each, totaling 10 items. The second aspect is the appreciation of art in the community, which includes 2.1) Value to Oneself, 2.2) Value to the Community, 2.3) Value to Local Wisdom, 2.4) Value to Art, and 2.5) Value for Practical Application, with 3 items for each, totaling 15 items. In total, the survey comprises 25 items and is based on a 5-point rating scale, categorized into five levels: Very High (4.50–5.00), High (3.50–4.49), Moderate (2.50–3.49), Low (1.50–2.49), and Lowest (1.00–1.49). The Index of Item Objective Congruence (IOC) for the survey was found to range between 0.71 and 1.00, indicating overall consistency.

4.2 The results of the study on the design process skills of high school students who learned through a learning management model incorporating design thinking with community-based learning are presented in Table 3.

Table 3: The results of the evaluation of the design process skills of high school students

Elements of evaluation	Full score	*M*	*SD*	Result
1. Community Study Process	3.00	2.62	0.50	Very Good
2. Source of Inspiration	3.00	2.75	0.44	Very Good
3. Concept Creation	3.00	2.44	0.63	Good
4. Sketch Design	3.00	2.43	0.72	Good
5. Selection of Expressive Techniques	3.00	2.56	0.72	Very Good
6. Artwork Creation	3.00	2.81	0.40	Very Good
7. Work Presentation	3.00	2.62	0.61	Very Good
Overall	**3.00**	**2.61**	**0.48**	**Very Good**

Table 3 shows that the results of the evaluation of the design process skills of high school students was at the very good level (*M* = 2.61, *SD* = 0.48). When considering individual aspects, it was found that Artwork Creation was at the highest level (*M* = 2.81, *SD* = 0.40), followed by Source of Inspiration (*M* = 2.75, *SD* = 0.44), and lastly, Sketch Design (*M* = 2.43, *SD* = 0.72).

4.3 The results of the study on local visual art works based on the creative economy concept, created by high school students who learned through a learning management model incorporating design thinking with community-based learning, are presented in Table 4.

Table 4: The results of the evaluation of local visual art works based on the creative economy concept, created by high school students

Elements of evaluation	Full score	*M*	*SD*	Result
1. Cultural Capital	3.00	2.75	0.44	Very Good
2. Creative Thinking Ability	3.00	2.56	0.51	Very Good
3. Local Visual Arts	3.00	2.44	0.51	Good
4. Added Value	3.00	2.56	0.51	Very Good
5. Artistic Value	3.00	2.43	0.51	Good
Overall	**3.00**	**2.55**	**0.39**	**Very Good**

Table 4 shows that the results of the evaluation of local visual arts works based on the creative economy concept of high school students was at the very good level (M = 2.55, SD = 0.39). When considering individual aspects, it was found that Cultural Capital was at the highest level (M = 2.75, SD = 0.44), followed by Creative Thinking Ability and added value (M = 2.56, SD = 0.51), and lastly, Artistic Value (M = 2.43, SD = 0.51).

4.4 The results of the study on the opinions of high school students who learned through a learning management model incorporating design thinking with community-based learning, and their appreciation of art within the community, are presented in Table 5.

Table 5: The results of the evaluation of the opinions of high school students

Elements of evaluation	M	SD	Result
1. The Learning Management Model			
1.1 Learning Content	4.78	0.43	Very high
1.2 Learning Activities	4.78	0.43	Very high
1.3 Learning Environment	4.81	0.36	Very high
1.4 Assessment and Evaluation	4.66	0.64	Very high
1.5 Benefits Gained	4.75	0.55	Very high
Overall score for the learning management model	**4.75**	**0.48**	Very high
2. The Appreciation of Art in the Community			
2.1 Value to Oneself	4.66	0.62	Very high
2.2 Value to the Community	4.51	0.68	Very high
2.3 Value to Local Wisdom	4.70	0.54	Very high
2.4 Value to Art	4.56	0.67	Very high
2.5 Value for Practical Application	4.41	0.75	high
Overall score for the appreciation of art in the community	**4.57**	**0.65**	Very high
Overall	**4.66**	**0.56**	Very high

From Table 5, it was found that the overall opinions of high school students who learned through a learning management model incorporating design thinking with community-based learning were at the highest level (M = 4.66, SD = 0.56). In the first aspect, the Learning Management Model, students' opinions were also at the highest level (M = 4.75, SD = 0.48). Specifically, the highest-rated item was the Learning Environment (M = 4.81, SD = 0.36), followed by two items: Learning Content and Learning Activities (M = 4.78, SD = 0.43), with Assessment and Evaluation being the lowest (M = 4.66, SD = 0.64).

In the second aspect, Appreciation of Art in the Community, the overall student opinions were at the highest level (M = 4.57, SD = 0.65). The highest-rated item in this aspect was the Value to Local Wisdom (M = 4.70, SD = 0.54), followed by the Value to Oneself (M = 4.66, SD = 0.62), with the value for Practical Application being rated the lowest (M = 4.41, SD = 0.75).

5. DISCUSSION

5.1 The learning management model using design thinking and community-based learning to enhance local visual arts based on the creative economy concept for high school students was found to be highly appropriate. This is likely due to the systematic development of the learning management model, which was designed by analyzing and organizing the teaching components to be interconnected, leading to the desired educational outcomes. This aligns with Romiszowski's (1981) concept of a systematic approach, which is a practical methodology used to solve problems in a step-by-step and rational manner, following the scientific process of cause-and-effect relationships. Similarly, Khammanee (2021) states that determining and organizing the components of a system in a sequential manner helps achieve the set goals. Such a system is typically structured as a step-by-step workflow or operation. The learning management model developed by the researchers comprises five components: 1) Principles, 2) Objectives, 3) Learning Process, 4) Assessment and Evaluation, and 5) Success Conditions. The learning process includes four stages (4P4C Model): 1) Perceive, which involves 1.1) Community Planning Survey, 1.2) Community Learning, and 1.3) Community Reflection; 2) Ideation Stage; 3) Prototyping Stage; and 4) Proof Stage, which includes Community Evaluation. The learning activities in each stage emphasize the thinking process, inspiring students through real-world learning experiences. Students gain direct experience by engaging in hands-on activities in learning environments, with a focus on participation, group processes, reflection and creative work. This approach allows students to explore and experiment with different techniques and methods for creative expression, making the learning

management model highly suitable. According to Sterman (2015), design thinking is a strategy for creative problem-solving that supports the development of 21st-century skills. It prepares learners with skills in collaboration, innovation, critical thinking, reviewing existing knowledge for improvement, and generating diverse ideas. It involves experimentation and the assessment of problem-solving methods in real-world situations. This aligns with the research by Guaman-Quintanilla et al. (2023), who studied the impact of design thinking in higher education: a multi-actor perspective on problem solving and creativity. The research found that applying design thinking significantly enhances students' problem-solving skills and creativity by integrating constructivist learning theory. Additionally, Singhachotsukpat (2020) emphasized that community-based learning focuses on engaging students in learning through community involvement and activities with community members. This interaction allows students to see the real context, developing both work skills and positive attitudes toward the community. This is consistent with the research by Chiu et al. (2023), which examined the use of self-determination theory to explain how community-based learning fosters student interest and identity in integrated STEM education. The findings showed that students demonstrated autonomy when encouraged to learn outside the classroom and engage with the community. They were able to create better products through iteration and user feedback, gaining meaningful learning experiences by developing products that benefit others. Therefore, a learning management model that incorporates design thinking with community-based learning fosters creative thinking in design, emphasizing innovation and invention through collaboration, hands-on practice, and a focus on the target audience. This approach equips students with collaboration skills and fosters innovation, while learning in real-world situations generates new experiences that lead to the creation of original work.

     5.2 The design process skills of high school students who learned through the learning management model by using design thinking with community-based learning were found to be at a very high level. This success can be attributed to the 4P4C learning model developed by the researcher, which consists of four stages, each incorporating seven design process skills synthesized by the researcher: 1) community study, 2) inspiration source, 3) concept creation, 4) sketch design, 5) technique selection, 6) artwork creation, and 7) presentation. These skills reflect the students' ability to plan, design, and execute artistic projects through a process that requires creativity, imagination, and emotional expression through visual art, utilizing artistic skills, techniques, and materials. This aligns with experiential learning theory, which emphasizes practical experience. Dewey (2005) states that learning through experience involves reasoning and integrating experience with conceptual thinking, observation, and practice, leading to the generation of ideas that further motivate learning. Similarly, Saengloetuthai et al. (2020) believes that practice allows students to learn from their own experiences, solving problems and seeking answers through systematic thinking and hands-on practice or real-world situations. This approach also aligns with constructivist theory, as stated by Chaichaowarat (2023), where learners construct their understanding rather than passively receiving information. In this model, the teacher's role is to create a learning environment and activities that encourage students to actively engage in exploration, knowledge-seeking, and problem-solving, while also considering the importance of social and cultural contexts in the learning process. This is consistent with the research by Cherdjerm (2017), who studied the development of the creative process in pottery making using a community-based approach and self-constructed knowledge for undergraduate students. The study outlined three main processes: self-knowledge creation through creative work, creative pottery-making, and community-based learning, each comprising five steps: 1) community selection and study, 2) preparation, 3) creative execution, 4) presentation, and 5) evaluation. The research found that students demonstrated a high level of understanding and competence in the process.

     When considering individual aspects, it was found that the creation of artwork had the highest average score. This could be due to the students' development in artistic expression, which progresses with age, as outlined in Lowenfeld and Lambert Brittain's (1987) theory of artistic development. This theory emphasizes the importance of accumulating experiences and maturity, suggesting that art education should provide experiences that align with the students' developmental stages and natural tendencies. As a result, students exhibit confidence in expressing themselves with purpose and strive to develop their skills to create their best work. Their artworks become increasingly realistic and can also convey abstract emotions. This aligns with the perspective of Keeratiwutipong (2015), who notes that the creative process in visual arts is similar to that in other art forms. An artist, as a creator, must possess a well-organized intellectual system, particularly in preparation, to ensure that the creation process is structured and leads to the intended outcomes. However, from an academic standpoint, both teachers and learners should focus on the creative process in visual arts rather than only admiring the final product. This is consistent with the research of Imsamraan and Sangvanich (2023), who studied art instruction aimed at enhancing sculpting skills and product quality based on Harrow's concept of developing learning skills in a ceramics design course for 11th-grade students. The research found that 1) sculpting skills significantly improved with an increase in the psychomotor domain by an average of

1.93 points, and that the factors influencing skill development included the challenge of the task, limited time for completion, classroom management, continuity of skills in activities, awareness of students' basic skill levels, and external stimuli outside the classroom.

      5.3 The local visual arts projects created by high school students who learned through the learning management model by using design thinking with community-based learning were found to be of a very high level. This is likely due to the systematic alignment and reinforcement of the students' design process skills, enabling them to achieve their learning objectives and produce creative works that reflect the principles of the creative economy. The 4P4C Model emphasizes design thinking, encouraging students to understand and interact with their communities, drawing on knowledge, inspiration, and cultural capital to create distinctive and valuable works through hands-on practice. This approach aligns with the ideas of Eggen and Kauchak (2006), who assert that understanding is built on prior knowledge and experiences, enhanced through social interaction, and deepened by active, experiential learning that connects to real-world contexts. Additionally, Khammanee (2021) highlights key principles of learner-centered education, including participation, constructivism, the learning process, interaction, and the application of knowledge—all of which contribute to successful learning outcomes. This is supported by the research of Wannapiroon and Kangvaravoot (2016), who developed an instructional model that promotes imagination through cloud-based social media to enhance learning skills within the creative economy framework. Her model includes seven steps: 1) setting a conceptual framework, 2) recording ideas, 3) drafting ideas, 4) creating, 5) exchanging and reviewing knowledge, 6) developing creative works according to the creative economy, and 7) evaluating the creative works. The study found that the students' creative work quality scores were at the highest level.

      When examining individual aspects, it was found that cultural capital had the highest average score. This may be due to the students' local visual arts projects, which, following the creative economy concept, demonstrated a distinct uniqueness by incorporating and communicating the local cultural heritage through various art forms. These projects evolved and integrated cultural elements into tangible, aesthetically pleasing art that serves practical purposes in daily life or on special occasions. The students adapted their works to keep pace with societal changes, contemporary demands, and shifting consumer behaviors, showcasing flexibility, creativity, and the ability to add value. As stated by the Department of Cultural Promotion (2019), culture serves as the starting point of the value chain in the creative industry, where cultural capital such as stories and content can distinguish products, turning them into cultural goods that increase their value. This aligns with the research of Watthanachanobon (2020), who studied the development of a knowledge management model for local wisdom to add value to the textile products of the Tai Yuan ethnic community enterprise. The design-thinking process aimed to practically apply knowledge in developing prototype products, creating differentiation under the concept of value creation, enhancing production processes, and ultimately leading to increased product value by integrating local wisdom as a foundation for creative products. Similarly, Tunyaboontrakun (2018) developed an art education curriculum based on place-based learning to foster suburban community art and cultural innovation. This process utilized design thinking and a seven-step Synectics creative thinking process: 1) studying information on art, culture, and wisdom; 2) analyzing problems and needs; 3) designing innovations, which includes 3.1) inspiring, 3.2) identifying interesting techniques, 3.3) considering expected benefits, and 3.4) designing using Synectics; 4) creating or developing innovations; 5) testing the innovations; 6) evaluating and refining the innovations; and 7) summarizing and disseminating the findings. The research concluded that the overall quality of the community art and cultural innovation was at the highest level.

      5.4 The opinions of high school students who learned through the learning management model using design thinking with community-based learning, as well as their appreciation of art and community, were rated at the highest level. This may be due to the design of learning activities that prioritized student learning as the central goal. The teaching components were analyzed and organized systematically to align with the intended learning outcomes, serving as a guideline for selecting appropriate learning processes and content tailored to the students' age and abilities. The use of diverse media and learning resources that corresponded with learning objectives, along with comprehensive evaluations of both the teaching process and student learning outcomes, contributed to the continuous improvement of teaching effectiveness. This approach aligns with Art-in (2021), who emphasizes the importance of student-centered learning, which allows students to learn according to their abilities, needs, aptitudes and interests. This method provides opportunities for students to explore, conduct learning activities independently using various media and resources, and learn from real-life situations in society. It fosters interaction with the environment, encourages group work, critical thinking, discussion, and collaborative learning, resulting in meaningful, enduring learning that can be applied in real life. Similarly, Chanchai (2014) states that the analysis of teaching and learning aims to provide information for determining learning outcomes and objectives. The key feature of instructional design is that it is a systematic process used to assess students' needs and address teaching and learning challenges, seeking ways

to resolve these issues. This is consistent with the research of Chalermsuk (2020), who studied an integrated art education teaching model based on design thinking, combined with practical art learning that integrates cognitive tools through cloud computing, aimed at enhancing high school students' creative artistic abilities. The study found that students' opinions on lesson design and the process of creative art-making were rated at the highest level.

When considering opinions on the learning management model, it was found that students rated the learning atmosphere highest, ranking it first. This may be because the learning management model was tailored to the students' context, creating a diverse and challenging environment that stimulated thinking processes. The approach focused on clear goals, prioritizing the students, giving them freedom of thought, and emphasizing creative thinking. Regular guidance and encouragement were provided, fostering enthusiasm for work within time constraints. Clear work steps were established to ensure adherence to the plan, and students were encouraged to speak up to facilitate interaction and exchange ideas, starting with an open-minded approach. This is consistent with Wongyai and Patphol (2020), who points out that learning in which students feel ownership is connected to their natural interests and needs. The role of students in designing learning activities allows them the freedom to think and utilize their own learning processes. They learn through active participation, exchanging knowledge, and interacting creatively with others, applying what they have learned to benefit their families, communities, and localities according to their potential. The teacher's role is to inspire students to pursue their learning goals, coach them to appreciate the value of learning, and connect what they learn to their way of life. Teachers should guide students in accessing appropriate learning resources and using them effectively. This aligns with the research by Wongwat (2016), which studied the approach of organizing art activities to create aesthetic experiences for students aged 16–18. The art activity program included instructions, the roles of facilitators and students, the atmosphere and location, evaluation, activity planning, and a guide for analyzing reflective journals. The research found that students could describe, review, and reflect on what they had done, express their feelings towards the activities, analyze, evaluate, summarize key ideas, and plan future activities. When analyzing aesthetic development based on Parsons' theory, it was found that all students had higher levels of aesthetic experience.

When considering students' perceptions of the value of art in relation to the community, it was found that students rated the value of local wisdom the highest. This may be due to learning activities conducted in real-life settings, where students gain firsthand experience by engaging with local experts, exploring the environment, cultural learning resources, and local lifestyles. Students participate in interviews with community members, interact with others, and develop a deeper understanding and appreciation for their own local culture. This experience serves as inspiration for developing local wisdom and creating new ideas through design thinking processes. This aligns with Chutsuriyawong (2014), who states that community knowledge refers to the understanding of problem-solving and community adaptation. This type of knowledge is referred to as "wisdom," which is derived from real-life experiences and is highly integrated, encompassing physical, mental, social, and environmental aspects, all grounded in cultural foundations. It connects to deeper abstract concepts and places greater emphasis on ethics rather than materialism. Furthermore, this is consistent with Sa-nguanpholphairot's (2019) research, which found that students' perceptions of the value and aesthetics of local wisdom were high, with the topic of Thai local wisdom being a source of national pride.

6. RECOMMENDATIONS

6.1 Recommendations from the research results

1. The research found that the average value of local visual art according to the creative economy concept, as perceived by students, was the lowest. The value of art includes six assessment components: 1) emotional impact, 2) content, 3) form, 4) creativity, 5) practical use, and 6) uniqueness. Therefore, teachers should provide theoretical knowledge of art and inspire students by encouraging visits to art exhibitions. This will help students gain diverse perspectives and experiences in art appreciation, leading to the creation of distinctive and valuable works of art in line with the goals of artistic creation.

2. The research found that the students' skills in the design process of visual art, particularly in sketching, had the lowest average. Consequently, teachers or educators interested in implementing this learning management model should set clear learning goals and timelines for each skill. They should stimulate students' enthusiasm and creativity, and guide them in practicing, developing, reviewing, and improving their work to meet the set timelines effectively.

3. The research revealed that students' opinions on measurement and evaluation had the lowest average. However, when examining the detailed results of the measurement and evaluation, all items were rated very good. Therefore, teachers should assess students' progress and development as part of the teaching

process. They should use a variety of assessment methods suited to what is being evaluated, covering both learning outcomes and the learning process effectively.

4. The research found that each community's learning resources, including location, culture, and local wisdom, were unique and varied. It is important to study these resources and local wisdom to design learning activities suitable for students. Access to community resources should be convenient and involve community cooperation in knowledge transfer. Teachers should be prepared to set up art spaces, coordinate, facilitate, and manage the classroom, as well as prepare learning materials and equipment to ensure that students can access these resources and engage in creative work.

6.2 Recommendation for future research

1. There should be a study of the issues faced by students and the needs of the community, educational institutions, organizations, and agencies involved in the design of local wisdom and the creative economy. Alternatively, integrating the Sustainable Development Goals (SDGs) could be used as a guideline for developing learning management models.

2. It is important to study other variables that affect learning or those related to perceived value, awareness, and feelings. This research could provide guidance on designing learning activities and assessment tools to evaluate the effectiveness of learning management models.

3. Research should employ a time series design to measure or observe repeatedly over different periods. This is essential because process skills require consistent practice. Such studies would enable the examination of students' developmental progress in creating beauty and durability, providing valuable learning and aesthetic experiences.

REFERENCES

Art-in, S. (2021). *Science and art of learning management in the 21st century* (4th ed.). Khon Kaen University. [in Thai]

Best, J. W. (1977). *Research in education*. Prentice Hall.

Chaichaowarat, R. (2023). *Learning experience design by design thinking*. Charansanitwong Printing. [in Thai]

Chalermsuk, N. (2020). *The development of blended instructional model in art education based on design thinking and practical art learning integrated with cognitive tools to enhance creative thinking and artworks of high school students* [Doctoral dissertation, Silpakorn University]. DSpace at Silpakorn University. http://ithesis-ir.su.ac.th/dspace/handle/123456789/3274 [in Thai]

Chanchai, S. (2014). *Design and development of teaching and learning*. Phetkasem Printing House. [in Thai]

Cherdjerm, S. (2017). *Development of ceremony creative process with community-based Learning and constructionism for undergraduate students* [Unpublished doctoral dissertation]. Naresuan University. [in Thai]

Chiu, T. K. F., Ismailov, M., Zhou, X., Xia, Q., Au, C. K., & Chai, C. S. (2023). Using self-determination theory to explain how community-based learning fosters student interest and identity in integrated STEM education. *International Journal of Science and Mathematics Education, 21*(1), 109–130. https://doi.org/10.1007/s10763-023-10382-x

Chutsuriyawong, S. (2014). *The paradigm of community based learning for enhancing critical thinking and creative problem solving abilities for elementary school students* [Doctoral dissertation, Silpakorn University]. Silpakorn University Repository (SURE). https://sure.su.ac.th/xmlui/handle/123456789/10336 [in Thai]

Department of Cultural Promotion. (2019, January 10). *Culture, value to added value.* Department of Cultural Promotion. http://www.culture.go.th/culture_th/ewt_news.php?nid=3972&filename=index [in Thai]

Dewey, J. (2005). *How we think: A restatement of the relation of reflective thinking and the educational process.* D. C. Heath.

Eggen, P. D., & Kauchak, D. P. (2006). *Strategies and models for teachers: Teaching content and thinking skills* (5th ed.). Pearson.

Guaman-Quintanilla, S., Everaert, P., Chiluiza, K., & Valcke, M. (2023). Impact of design thinking in higher education: A multi-actor perspective on problem solving and creativity. *International Journal of Technology and Design Education, 33*, 217–240. https://doi.org/10.1007/s10798-021-09724-z

Howkins, J. (2001). *The creative economy: How people make money from ideas*. Penguin Publishing.

IDEO Toolkit. (2012). *Design thinking for educators* (2nd ed.). https://f.hubspotusercontent30.net/hubfs/6474038/Design%20for%20Learning/IDEO_DTEdu_v2_toolkit+workbook.pdf

Imsamraan, S., & Sangvanich, K. (2023). Teaching art to improve decorative molding skills and product quality in a pottery design course for grade 11 learners using Harrow's learning theory. *Journal of Liberal Arts, Thammasat University, 23*(1), 368–384. https://doi.org/10.14456/lartstu.2023.16 [in Thai]

Kaewto, P. (2021). *The development of art activities to develop the creativity and artistic skills of grade 12 students* [Master's thesis, Srinakharinwirot University]. DSpace at Srinakharinwirot University. http://ir-ithesis.swu.ac.th/dspace/handle/123456789/1958 [in Thai]

Keeratiwutipong, J. (2015). *Aesthetic of visual elements in the visual art: Inspiration from Nora*. Nakhon Si Thammarat Rajabhat University. [in Thai]

Khammanee, T. (2021). *The science of teaching knowledge for effective learning process management* (23th ed.). Chulalongkorn University Press. [in Thai]

Lowenfeld, V., & Lambert Brittain, W. (1987). *Creative and mental growth* (8th ed.). Macmillan.

Makkhaw, M. (2022). *Development of communities-based paper art activities to enhance folk-art value appreciation for ninth grade students* [Master's thesis, Chulalongkorn University]. Chula Digital Collections. https://digital.car.chula.ac.th/cgi/viewcontent.cgi?article=7640&context=chulaetd [in Thai]

Phinla, W. (2017). *Development of local studies learning management model to enhance conservative behavior of local wisdom for undergraduate students* [Doctoral dissertation, Silpakorn University]. DSpace at Silpakorn University. http://ithesis-ir.su.ac.th/dspace/handle/123456789/1378 [in Thai]

Rittikoop, W. (2018). Community-based learning: Effective pedagogy strategies for teachers in the 21st century. *Graduate School Journal, 11*(3), 179–191. [in Thai]

Romiszowski, A. (1981). *Designing instructional systems: Decision making in course planning and curriculum design*. Nichols.

Saengloetuthai, J., Thongnin, P., Booncherdchoo, N., Maneerat, C., Srisopha, Y., & Takomsane, M. (2020). Action learning. *Academic Journal of Phetchaburi Rajabhat University, 10*(3), 115–163. https://journal.pbru.ac.th/admin/upload/article/5729-2021-04-05.pdf [in Thai]

Sa-nguanpholphairot, P. (2019). Development of a teaching model integrating local wisdom with visual arts learning management at the lower secondary education level. *Burapha Arts Journal, 22*(2), 105–119. https://so01.tci-thaijo.org/index.php/buraphaJ/article/view/241941 [in Thai]

Singhachotsukpat, R. (2020). *Development of a virtual field trip with community-based learning to enhance civic engagement of upper secondary school students* [Master's thesis, Chulalongkorn University]. Chula Digital Collections. https://digital.car.chula.ac.th/cgi/viewcontent.cgi?article=5053&context=chulaetd [in Thai]

Sterman, C. (2015, September 28). *Teaching by design: Design thinking is a problem-solving strategy that helps build students 21st century skills*. National Association of Elementary School Principals (naesp™). https://www.naesp.org/resource/teaching-by-design/

Tunyaboontrakun, P. (2018). *Development of place-based art education curriculum to create suburban community artistic and cultural innovations* [Doctoral dissertation, Chulalongkorn University]. Chulalongkorn University Intellectual Repository (CUIR). https://cuir.car.chula.ac.th/handle/123456789/80528 [in Thai]

Wannapiroon, P., & Kangvaravoot, C. (2016). Development idea marathon instructional model via social cloud (IMSC model) to enhance creative economy thinking. *The Science Journal of Phetchaburi Rajabhat University, 13*(1), 72–80. [in Thai]

Watthanachanobon, W. (2020). *Development of a local wisdom knowledge management model to enhance economic valued-added textile products based on Thai-Yuan ethnic groups in mid central provincial cluster* [Doctoral dissertation, Silpakorn University]. DSpace at Silpakorn University. http://ithesis-ir.su.ac.th/dspace/handle/123456789/3018 [in Thai]

Wongwat, A. (2016). *Guidelines for contemplative art activities to create aesthetic experiences of students age 16–18 years old* [Master's thesis, Chulalongkorn University]. Chula DigiVerse. https://digiverse.chula.ac.th/Info/item/dc:16657 [in Thai]

Wongyai, W., & Patphol, M. (2020). *Creative learning*. Charansanitwong Printing. [in Thai]