

The Development of Blended Instructional Model Based on Design Thinking and Practical Art Learning Integrated with Cognitive Tools to Enhance Creative Thinking and Artworks

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Abstract: This research aims to create a model and study the result of applying the Development of Blended Instructional Model with design thinking methods and practical arts learning that is integrated with cognitive tools to develop art production creativity. The research result found that: 1) The model was composed of five components which are 1. Blended art learning activities 2. Learning sources 3. Communication/Interaction to the learning, 4. Learning and teaching management and 5. Learning evaluation. Also, there were six steps of learning and teaching activities which are, firstly, creating inspiration and knowledge acquisition, secondly, knowledge collection and access, thirdly, thought-provoking and knowledge expansion, fourthly, constructing creative works, fifthly, developing the adapted works, and, lastly, criticism and evaluation. 2) Experimental results of the blended instructional model saw that high school students had average score significantly higher than previously at the statistical level of .05 and artworks of students had creativity score above the specified standard with an average value in the high level.

Keywords: Blended learning, practical art learning, design thinking, cognitive tool.

1. Introduction

The concept of art learning and teaching curriculum was applied to the management of arts learning for secondary-school level in many countries, such as the USA, Australia, Singapore, or Hong Kong special Administrative Region. Art academics believed that Discipline-Based Art Education (DBAE) contains principles and rationales of learning to be Civilized Humans [1], which is extremely related to the goals of current curriculum. As teaching and learning the art science is a course regarding artwork creating process, artwork creating techniques, and creative thinking process, students are required to practice artwork-creating skills by having distinctive thinking ideas and novel thinking process to create artworks variously.

Therefore, thinking different teaching and learning models is essential and suitable for contexts of individual student. E-learning concept of learning theory has been brought to adapt to the blended learning model following the concept of design thinking and practical art to develop the capability of students' artworks. The concepts and techniques of artist artworks in each era to synthesize into unique artworks is studied and later students can bring them to generate creative artworks [2]. This blended learning is flexible in times and places, so pupils can learn any time and place.

In this model design, the problems, students, learning environment, content, work/activities, objectives and assessment criteria are analyzed. After those issues are analyzed, the next step is to design content, set up learning objectives, create interactive feedbacks, and design link to support learning activities, presentation, discussion, practice, assignment, and student evaluation which are learned and exchanged between students and students, and between students and teacher. [3] – [8].

The mentioned background shows that there is a change happening to art learning and teaching contexts from the past highlighting on artwork-creating skills, portrait drawing, and learning and teaching model of craftsman-style art in which the Basic Education Core Curriculum BE 2503-2521 (1960-1978) offered a child-centered direction. After that, the Basic Education Core Curriculum BE 2551 (2008), the current curriculum, has converged knowledge of visual art, music, and dancing art. The learning and teaching in the present focus on the learners to be skilled in the 21st century to transform the integrated learning experiences. This stresses on learning management to develop the learning quality of students creatively and link the learner development to build up learning quality development process by answering the future world. This could progress the learning and teaching to assist learners to creatively have thinking process through art course systematically. Also, it is important to integrate the learning management resulted in learning activities integrated between art science and children-learning environment to support other types of intellectual development which depends on proficiency

and interest. Significantly, the aesthetic development and physical, emotion and social development are vital to be supported.

The researcher sees the importance of this research to study, research and develop blended learning environment model of design thinking and practical art learning which integrate cognitive tools to develop artwork creative thinking of high-school students in this time. This learning management supports the aesthetic development from direct and indirect experiences, particularly an opportunity for learners to learn from direct experience through touching objects or diverse art exhibitions in various learning sources.

Setting the learning environment to support aesthetic experiences can allow children absorbing new experiences by motivating to solve problems or invent materials or create method of self-made artwork and having communication ability with others. This brings about active learning to absorb learning, appreciating art, realizing the importance of art value, public consciousness and capability of innovative cooperative creator, teamworking, citizenship, and sustainable coexistence with nature and science.

2. Objective of the Research

- 2.1 To construct the blended learning environmental model following the design thinking method and practical art learning integrated with intellectual tools to develop the creativity.
- 2.2 To study the result of instructional model compared with achievement score of pre and post learning, and creativity score of post learning of students in the blended instructional environmental model following the design thinking method and practical art learning.

3. Research Methodology

The mixed method of research and development is used in this research qualification. The researcher experimented in the basic pre-experimental research design as follows.

In the first step, the learning and teaching conditions and related theories are studied. The research tools consist of 1. Questionnaires of learning and teaching conditions and requirement and basic information for Visual art teachers and 2. Questionnaires of learning and teaching and needs and basic information of learning art for high school students. Both tools are valued with the IOC equal to 0.67-1.00 3. Structured interview questionnaires of experts valued the IOC equal to 1.00.

The research process of the first step are 1) analyzing and synthesizing the theory principles of research documents regarding learning and teaching the art course, blended learning and teaching, design thinking of practical art, and creative thinking 2) studying the problems, needs and requirement, and basic information of learning and teaching with 19 art teachers of demonstration school under the government university, and 3) studying the problems, needs and requirement, and basic information of learning and teaching with 180 students 4 study the opinion from 10 experts through interviewing the design of activities and blended instructional process of design thinking, creative thinking, and artwork construction.

The second step proceeds to 1) analyze the synthetization, theoretical principles of research documents related to learning and teaching art studies, mixed learning method, design thinking, practical art, and creative thinking, 2) study the problems, requirement, and basic learning and teaching information of 19 art teachers of demonstration school under the government universities, 3) study the problems, needs, and basic learning and teaching information of 180 students, and 4) study the opinions from 10 experts interviewed of activity design methods and process of mixed learning and teaching, design thinking, creativity, and artwork construction.

In this second step of design and develop the mixed learning and teaching model, the research tools are composed of 1) drafting steps and process of mixed learning and teaching environment following the design thinking collaborating with learning practical art integrated with cognitive tools, 2) evaluation form of model approximation passed the IOC value equal to 0.67-1.00, 3(learning management plan and online classroom integrated with cognitive tools (steps of the instructional process) passed the IOC value of 0.67-1.00, 4(creativity evaluation form of mixed learning and teaching art course passed the IOC value which each question of creative artwork evaluation form valued the IOC of 0.80-1.00, and 5) creative artwork evaluation form and questions of artwork evaluation form valued the IOC of 0.67-1.00.

The research steps in the second process are as follows.

1. Design (draft) the model following the concept of mixed learning and teaching which the steps to develop the systematical learning and teaching are (1) setting up goals of each learning step, (2) setting up activities during teaching art, (3) setting up basic required skills before learning art, (4) setting up goals of learning art, (5) analyzing the content and designing activities of learning art, (6) adapting strategies in learning and teaching art, and (7) setting up strategies in evaluation as the design thinking concept consists of six steps which include the cognitive tools synthesizing and investigating the target appropriation.

2. Evaluate the approximation of the model draft by bringing it for five experts to evaluate which the model (draft) has the highest approximation level) $\bar{X} = 4.83$, S.D.= 0.30).
3. Create the learning management plan following the model path and formed plan which is evaluated by 3 experts which its quality is in the highest level) $\bar{X} = 4.67$ S.D= 0.58(.
4. Build up an online classroom in the course of Visual art integrated with the cognitive tools through the Learning Management System (LMS) of the learning and teaching model created the content in 5 units which the media quality of online classroom is evaluated by 3 experts and the quality is found in the high level) $\bar{X} = 4.33$, S.D.= 0.30(.
5. Create the creativity evaluation form of mixed learning and teaching environment to evaluate the creative capability of the learners which is the rating scale form of 5 levels composed of 1. Originality of novelty technique, 2. Variety and approximate completion of thought fluency, 3. Flexibility of technique application to create artwork, 4. Elaboration of artwork creation, and 5. Abstractness of titles. This is evaluated by 3 experts and the quality was found in the highest level) $\bar{X} = 4.67$ S.D= 0.58(.
6. create the artwork evaluation form divided into 4 categories which are 1. Creativity concept 2. Composition 3. Unique style and 4. Artwork completion which are evaluated by 3 experts that the quality is in the highest level) $\bar{X} = 4.67$ S.D=0.58(. In the third step, the mixed learning and teaching environment model is experimented which the sample group is a classroom of 48 students with purposive sampling. The experiment method is as follows 1) proceed the research by using the mixed learning and teaching model with the sample group following the learning management plan set in both offline and online classroom for 10 weeks, 2) after 10 weeks of learning, evaluate the post-learning creativity of the experimented sample group and evaluate post-learning artwork of the students, and 3) collect the data to analyze the statistic later.

4. Research result

4.1. Blended instructional environmental model following the design thinking method and practical art learning integrated with generated cognitive tools. This consists of five elements which are

1. blended art learning activities,
2. learning sources,
3. learning communication and interaction,
4. learning and teaching administration and
5. learning result evaluation

The activity process of learning and teaching carries six steps. The first step is the creation of inspiration and knowledge search. The second step is collection and access to knowledge. The third step is thought motivation to expand the knowledge. The fourth step is artwork creation. The fifth step is artwork development. The last step is criticism and evaluation to apply practically and appropriately.

The cognitive tools for learning are divided as YouTube, Pinterest, Padlet, Google Suit, Line, Instagram, Canva, Autodesk, Adobe Creation Cloud, Piktochart, Mentimeter. Also, the cognitive tools for artwork creation (Cognitive Tools for Creative Art education) are ibis Paint, Autodesk Sketch Book, Medibang paint, Procreate, Sketches, Adobe illustrator draw, Adobe Photoshop Skecth. The experts evaluated the elements and steps of model in the highest level with the average value) $\bar{X} = 4.83$, S.D.= 0.30(

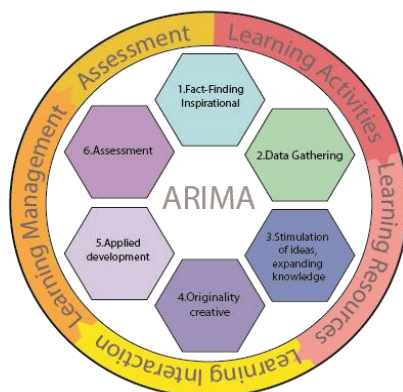


Figure1 The blended learning and teaching model of art course following the design thinking

4.2. The experiment result of the blended learning and teaching environmental model application in the students illustrated that the average scores of post-learning was higher than pre-learning at the level of .01

Table1 Comparison of average score of artwork creative thinking of high school students pre and post learning

Score	Total score	\bar{X}	S.D.	df	t-test	Sig.
Pre-learning	30	12.74	1.70	37	41.985*	.000
Post-learning	30	25.71	2.23			

4.3. The creativity score result of post learning of the model is in the high level of art composition with average score of 4.44 and S.D. of 0.25., the creativity average score of 4.36 and S.D. of 0.07, the identity average score of 4.34, S.D. of 0.29, and the average score of artwork completion of 4.08,S.D.of 0.34.

Table 2 Comparison of creative thinking which is divided into pre and post learning with the model

Creativity	\bar{X}	S.D.	Result
Concept	4.36	0.07	High
Composition	4.44	0.25	High
Style	4.34	0.29	High
ArtCompleteness	4.08	0.34	High

5. Discussion

5.1 The blended instructional model of art course based on the design thinking and practical art learning integrated with the developed cognitive tools which was approved by the experts found its appropriateness in the highest level. This is because this blended instructional model was systematically progressed and brought the basic analysis result of learning outcome following the learning standard and indicators of Basic Education Curriculums. Instructional problems and needs of secondary-school teachers of art course were investigated. In this research, there are five elements developed through the instructional model which [14]. mentioned that learning activities in the blended instruction is effective for learners. Conformingly to [15]. A Blended Collaborative Teaching Mode in Language Learning Based on Recommendation Algorithm.

The learners can learn in a classroom with corroborative learning activities as [16]. cited that the computer and Internet application is a tool in searching information and spreading the knowledge. This tool can benefit the student learning and help to consult and exchange ideas with others in the form of time-synchronizing and non-time-synchronizing, and evaluation.

According to [17]. learning management of blended instructional model integrated with cooperative problem-solving and Synectic technique can help creative problem-solving skill of students. Teacher should also evaluate the outcomes owing to actual condition and steps of learning and teaching activities in the blended model. This is composed of six steps which are as follows. The first step: to build up inspiration and search the knowledge, the second step: to collect and access to knowledge, the third step: to motivate a thought to expand the knowledge, the fourth step: to create work, the fifth step: develop work application, and the sixth step: to criticize or evaluate. This was evaluated by the specialists with approximation in every step.

Moreover, [18]. researched and developed the investigative learning model through Cloud technology to support rationally thinking and cooperative learning. She discovered that learning context of learners could create problems during learning and teaching such as using tools to design a picture draft, designing to present the information. The instructor then needed to introduce tools, introduce the suitable tools or technology selection to benefit artwork creation of learners and help giving approximate and immediate advice to learners.

5.2 The experiment result of the model showed that secondary-school students had average scores higher than previously with a significant statistic at the level of .05.

Moreover, the student artwork contained creativity score above the determined standard with the average score in the high level following the set hypothesis.

The students systematically developed capability of constructing creative art because of each step in the process and practice of artwork creation as well as the analysis of artwork creation guidelines from artists to extensively apply to be their own artworks. Conformingly to [19]. comparison of learner creativity after learning is higher than that before learning with a significant statistic in the level of .05. Therefore, the learners highly have creativity from systematically learning in the process. Conformingly to [20]. Impact of Blended Learning Assisted with Self-Assessment toward Learner Autonomy and Creative Thinking Skills.

5.3 The creativity score result in post learning period of the students in the blended instructional model of art course following the design thinking and practical art to create artwork of secondary-school students illustrated the average value of creativity in the post-learning in the highest of art composition with the mean of 4.44 and SD of 0.25.

This is a consequence of the model which has various design thinking methods of motivation, collection and thinking management process resulted in innovative creation to solve problems and respond to requirement.

The brainstorming concept distills self-thinking process to generate a new value and bring about artwork creation which is a systematic innovation of various imagination from different people groups. The innovative prototype was made to be tested and its outcome can be adapted to revise until the creative artwork is complete.

Then, the result of average score of art composition contained the highest average score. Anwar,[21]. cited that the strategies of creative thinking development and learning environment of students are not supposed to be overly controlled. The teacher should motivate students to independently think, without fear to search and seek or create an innovation, so the students can see failure as a new opportunity to learn and produce the innovation. Conformingly to [22]. Use of Video Project Assignment (VPA) To Enhance Students' Achievement in Communicative English Subject.

6. Conclusion

The Blended Instructional model assists students in reaching higher levels of academic achievement. Furthermore, students who study with the integrated teaching model have better skills in using technology in learning and will be able to apply their knowledge and skills in the future to create effective learning.

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