



# The Learning Achievement of Grade Seven Students on Landscape Painting Through 3D Paper Model

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## Abstract

An effective teaching and learning management is to give students the optimum chance to participate and gain learning experience by themselves. A teacher's role is the facilitator who arranges proper learning activities and materials on surrounding pictures. This research aims to study the learning achievement of Grade 7 students on landscape painting through 3D paper model and the learning method that does not use 3D paper model. The samples in this study are 70 students of Grade 7 in the second semester of the academic year 2013 at Sarasas Witaed Nimitmai School, Klongsamwa, Bangkok. Cluster random sampling is used to select the population samples from 2 classes which have 35 students each. The experimental study is conducted by using 3D paper model for 12 weeks at 60 minutes. The research tools are 3D paper model, pretest and posttest, and questionnaires on satisfaction in using 3D paper model. The researcher conducts the research in compliance with the experiment plan. The method of data analysis is to find the average, standard deviation and t-test for dependent-samples.

The research results are that the learning achievement of Grade 7 students learning landscape painting through 3D paper model is improved at 0.01 statistically and significantly and the satisfaction on learning through 3D paper model is in the highest level.

**Key words:** 3D Paper Model, Learning Achievement, Landscape Painting.

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## Introduction

Art learning that emphasizes the encouragement of children's development and creativity through their imagination and abilities together with the exhibition of their creative thinking shows that art is man-made materials based on emotion and ideas which are not formed naturally. Art is a subject that helps polish children's habits, encourages their good habits, makes them be optimistic, makes them understand the value of natural beauty, enhances their initiatives and cre-

ative thinking, lets them have freedom of thinking, fosters honesty and tolerance in them, makes them grow up with intelligent, emotional and social skills (Kromwichakarn, 2002). In addition, this subject plays an important role in developing children's recognition, creativity and aesthetic together with their expression on feeling, idea and imagination.

Materials have a significant role in teaching from past to present as the media that helps create an efficient communication between instructors and learn-

ers and helps the learners to understand the meaning of the lessons in the same way as the instructors regardless of the type of materials. All materials are the resources that can facilitate the learning. Gerlach and Ely mentioned that “teaching materials” were individuals, objects or events which made students attain knowledge, skills and attitudes. Teachers, books and school environment are considered teaching materials. Chaiyos Ruangsuwan said that “teaching materials” were things that teachers and students used to encourage more efficient teaching and learning. Pruang Kumut mentioned that teaching materials referred to things that were used as a tool or channel for conveying the teachings to learners which enabled learners to well achieve the learning objectives or the targets planned by teachers. Pornsak Khaoprom (2005:27) stated that teaching materials for art education were tools or methods used for teaching art which made students learn efficiently and be able to express effectively according to teachers’ objectives. Suchart Pipat (2006:33) mentioned that teaching materials were the media that teachers used to make students recognize and understand the lessons. Therefore, for producing and making teaching materials, teachers need to learn and understand that the applied teaching materials (1) should make the students recognize the lessons and expand knowledge, ideas and understandings which are necessary for creating art directly, (2) should improve students’ knowledge, ideas and understandings, and (3) should inspire the students’ expression and creativity. Thus, teaching materials are the media that lead contents and experiences from instructors to learners and help students to learn efficiently and understand the lessons clearly to meet teachers’ requirements, help shorten the time of learning, facilitate the learning activities, and help create good learning atmosphere.

Paper Model is the art involving paper with line pattern for cut and paste to make dimensional shapes including animals, objects, utensils, various styles of boxes, cartoon characters, robots, cars, motorcycles,

boats, airplanes, cool and strange vehicles, places as the models or the new designed art. Some works are formed by actual-size pieces such as Yamaha motorcycle model. Paper model is a well-designed media object. It is suitable for people of all ages and genders who like arts and hobbies because of its variety of difficulty levels ranging from easy, moderate, difficult to very difficult.

The researcher is interested in designing 3D paper model; therefore, teaching materials in forms of paper model called Paper Craft or Paper-Card Modeling that is the dimensional art made of paper are used for teaching landscape painting through 3D paper model in Art subject. It helps develop learners in all aspects including idea, feeling and working. It encourages learners to learn by themselves and gain learning skills. Moreover, 3D paper model is a medium that helps motivate learners because of its proper forms both contents and its virtual features illustrating landscape. Therefore, it is a more efficient way to solve problems in teaching and learning landscape painting.

## Objectives

1. To study the learning achievement of Grade 7 students on landscape painting through 3D paper model teaching media.
2. To evaluate the Grade 7 students’ satisfaction on learning landscape painting through 3D paper model teaching media.

## Conceptual Framework

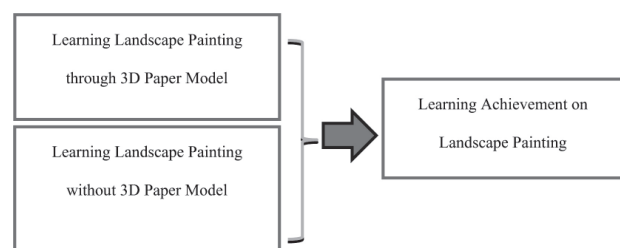


Figure 1. Conceptual Framework

## Population and Samples

The population in this study are 35 students each from 2 classes of Grade 7 altogether 70 students at Sarasas Witaed Nimitmai School, Klongsamwa, Bangkok in the second semester of academic year 2013.

The samples are 70 students from 2 classes of Grade 7 at Sarasas Witaed Nimitmai School, Klongsamwa, Bangkok in the second semester of academic year 2013. 35 students each of two groups are obtained through cluster random sampling. The teaching and learning of Group 1 is managed through 3D paper model whereas 3D paper model was not used in Group 2.

## Variables

### 1. Independent Variables include

- Teaching and learning landscape painting through 3D paper model
- Teaching and learning landscape painting without 3D paper model

### 2. Dependent Variables include

- Learning achievement of landscape painting using 3D paper model
- Satisfaction on teaching and learning landscape painting through 3D paper model

## Hypothesis

1. Learning achievement of Grade 7 students who learn landscape painting through 3D paper model will be better than students who do not use 3D paper model.

2. Grade 7 students who learn landscape painting through 3D paper model will yield the highest level of satisfaction.

## Materials and Methods

Quasi-experimental design was used in this study for research and development of art skills of Grade 7 students who studied landscape painting using 3D paper model teaching media in Art subject.

1. Make lesson plans for 8 learning activities on landscape painting using 3D paper model and 8 learning activities on landscape painting without 3D paper model by studying 2008 Basic Education Curriculum, School Curriculum, teacher's manual and documents.

2. Propose the lesson plans on landscape painting using 3D paper model and without using 3D paper model to three Advisors and Experts for considering the consistency of objectives, contents, activities and assessment and adjust the lesson plans to comply with the experts' recommendation thereafter.

3. Try the lesson plans on landscape painting without 3D paper model with Grade 7/3 students, at Sarasas Witaed Nimitmai School, Klongsamwa, Bangkok in the second semester of academic year 2013, who are not the research samples.

4. Try the lesson plans on landscape painting without 3D paper model with Grade 7/2 students, at Sarasas Witaed Nimitmai School, Klongsamwa, Bangkok in the second semester of academic year 2013, who are the research samples.

### **The Development of a Landscape painting 3D paper model.**

1. Study the method of making 3D paper model with respect to features of good teaching materials, techniques and procedures of making different models by searching other relevant electronic media, books, documents and texts.

2. Design the outline of landscape painting 3D paper model in compliance with the contents and objectives that are suitable for learners; propose the outline of 3D paper model to the research advisors.

3. Make 3 pieces of landscape painting 3D paper models: onland landscape painting 3D paper model for the first piece, structure landscape painting 3D paper model for the second piece, sea landscape painting 3D paper model for the third piece. Present them to 3 experts for examining the appropriateness of teaching materials and contents and adjust them toward the recommendation thereafter.

4. Try out the improved landscape painting 3D paper models with the samples and compare the pre-learning achievement and post-learning achievement of the students who study through landscape painting 3D paper models.

#### **Test paper of landscape painting using 3D paper model for Grade 7 students.**

1. Study the method of making test paper in books and documents related to testing and assessment as a guideline to design achievement test.

2. Analyze the curriculum, classify the objectives of contents, classify the contents, specify the concept of each topic, and make learning achievement test on the experimented contents taken from the detail analysis table according to the curriculum analysis result. The test contains 20 questions with 4 choices each.

3. Find the validity of the achievement test on learning landscape painting and obtain Art teaching expert's approval on the validity of contents according to the structure by comparing with curriculum analysis table to see if the test covers the features specified in the table. Multiple choice questions are used in compliance with the required behaviors for testing the language correctness together with considering the consistency between testing questions and learning objectives to find the Index of Consistency (IOC) between the test and the learning objectives. Then select the test that its value is 0.5 up.

4. Determine the quality of the tests taken by Grade 7 students at SarasasWitaedNimitmai School; analyze the Difficulty ( $p$ ), Discrimination ( $r$ ); and select the tests that show ( $p$ ).

5. Use the selected test to retest 35 students who are not the research samples to obtain the reliability of the particular test paper at 0.946 then use it for the actual test.

#### **Questionnaires on the students' satisfaction**

1. Study documents and research related to satisfaction. Design satisfaction test on learning process management of landscape painting 3D paper

model which covers the contents related to patterns and characteristics of teaching and learning activities, assessment and learners' advantages. Type of test is common with 30 questions of 5 levels assessment.

2. Adjust the satisfaction test in compliance with the 3 experts' recommendation after they have examined language correctness and inclusiveness of different aspects specified and have considered the content validity.

#### **Data Collection**

This is the research and development study conducted through 10 weeks experiment with Grade 7 students at SarasasWitaedNimitmai School, Klongsamwa, Bangkok in the second semester of academic year 2013. The procedures are as follows:

1. Teach 35 students of Experiment Group 1 in compliance with lesson plan by using 3D paper model and teach 35 students of Experiment Group 2 in compliance with lesson plan without using 3D paper model at SarasasWitaedNimitmai School, Klongsamwa, Bangkok for 10 hours.

2. Posttest is taken for 2 hours by the 2 sample groups using 3D paper model and without using 3D paper model. And, the results of achievement assessment are used to find statistical values.

3. Compare the achievement of Experiment Group 1 and Experiment Group 2 using the difference between pretest and posttest scores then examine the hypothesis of satisfaction on teaching and learning using post-learning questionnaire after the statistical analysis.

#### **Data Analysis**

The researcher analyzed the research results statistically as follows:

1. Used t-test independent in form of different score to compare the learning achievement on landscape painting of Experiment Group 1 and Experiment Group 2.

2. Used t-test independent in form of different score to compare the satisfaction on learning landscape painting of Experiment Group 1 and Experiment Group 2.

## Results and Discussion

The quality assessment result of landscape painting 3D paper model of Grade 7 made by the experts is in between 1 the highest and 0 the lowest. The Index of Consistency of the holistic aspects is 1.0 which shows "fair" level of quality.

1. The study result of quality and efficiency and effective index of lesson plan on landscape painting of Grade 7 students using 3D paper model according to the criteria of 80/80 finds that the Index of Consistency of the holistic aspects of exercises is 0.97 in average which shows fair level of quality and the effective index is 0.6676.

2. The study result of quality and efficiency and effective index of lesson plan on landscape painting of Grade 7 students without using 3D paper model according to the criteria of 80/80 finds that the efficiency (E1/E2) is 77.07/77.14 which is under the standard of 80/80 and the effective index is 0.6602.

3. The study result of learning and learning achievement on landscape painting of Grade 7 students before and after using 3D paper model finds that the score after learning is higher than the score before learning. Therefore, learning achievement is statistically higher at .05 significantly. Most students are able to do the landscape painting well.

4. The study finds that the satisfaction of the samples from Grade 7 who study landscape painting through 3D paper model is in the "very much" level at 4.36 in average for overall aspects ( $\Sigma\bar{x}$ ) and 0.52 standard deviation (SD).

The research results before and after participating the learning activities prove the hypothesis as follows:

**1. The efficiency** of lesson plan on landscape painting through 3D paper model of Grade 7 students

is 82.79/84.43. The effective index of lesson plan on landscape painting through 3D paper model of Grade 7 students is 0.6676 which represents that the average score of students during their studies obtained from topic wrap up quiz is 82.79 percent, the average score of learning achievement obtained from post-test is 84.43 percent, and the learning progress value is 66.76 percent. It shows that the lesson plan on landscape painting through 3D paper model of Grade 7 students developed by the researcher meets the criteria of efficiency that is 80/80. This is because the lesson plan is developed and constructed through the procedures of learning the curricula, teacher's manuals, techniques, processes, theories and documents related to learning activities. It is examined by advisors and its quality and content consistency are assessed by experts. In addition, the researcher adjusts it in compliance with the advisors' and experts' recommendation. Therefore, the lesson plan is efficient as designated. The learning activities on landscape painting through 3D paper model of Grade 7 students help the students learn better because paper model is an interesting and new teaching material that is a medium leading them to understand the contents clearly. As a result, the students show their understandings by conveying the better works which are consistent to what Kidanan Malithong (2005:48) said that teaching materials played a critical role in teaching from past to present because they were the media that helped make an efficient communication between instructors and learners and helped learners to understand the contents in the same way required by instructors, regardless of their forms, they were resources that facilitated the learning. Pornsak Khaoprom (2005:27) stated that teaching materials for art education was the tools or methods used for teaching art and helped students learn efficiently which was consistent to Wiboon Jaronpan (2009) that studied the learning result on STAD collaborative technique on creative painting in Art subject of Grade 6 and found that the efficiency was 86.66/83.85

which was consistent to the research of Wannarat Kamcharee (2003: Abstract) that studied the learning result on painting using mixed materials lesson in Art subject of Grade 4 and found that the efficiency of mixed materials lesson was 89.30/84.29 which was above the specified criteria of 80/80.

## **2. Learning Achievement**

The study result of the learning achievement between Grade 7 students who study landscape painting through 3D paper model and without 3D paper model finds that the average score of learning achievement before and after learning is statistically different at .05 significantly which proves the hypothesis. It shows that the learning activities in Art subject on landscape painting through 3D paper model of Grade 7 students influence the development of knowledge and abilities better than learning without 3D paper model which is consistent to the research of Somsawat Pokod (2009: Abstract) that studied the result of STAD collaborative learning activities in Art subject of Grade 8 The study result found that learning achievement after learning was statistically higher than it was before learning at 0.5 significantly which was consistent to the study result of Pornnipa Makmooldee (2008: 83-84) that compared the learning results of Grade 9 students who learned through STAD Collaborative Group learning activity. It was found that it influenced analytical reading after learning more than it was before learning at .05 significantly and statistically.

## **3. Satisfaction on Learning**

The study result of satisfaction on learning landscape painting through 3D paper model of Grade 7

students found that the satisfaction was in the highest level which was consistent to Wannarat (2007: Abstract) that studied the learning achievement on painting using mixed materials lesson in Art subject of Grade 4. It was found that the students' satisfaction was 39.29 altogether in average which was in the highest level.

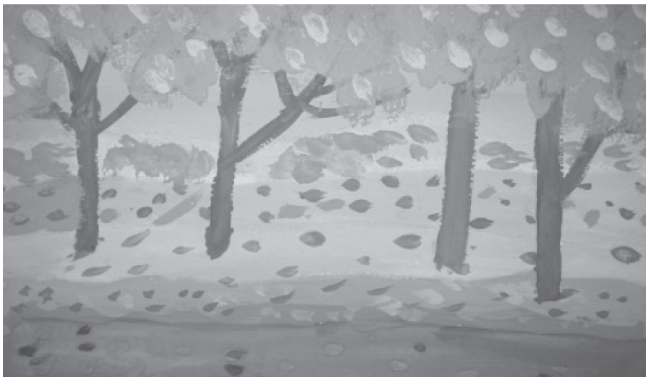
Therefore, the achievement of Grade 7 students who study landscape painting through 3D paper model is better than those who study without 3D paper model. And, the students' satisfaction on learning landscape painting through 3D paper model is in the highest level which proves the specified hypothesis because of its virtual features of picture composition and colour application standard which produce the small size and light weight tangible copies in 3D paper model. It is new and it motivates interest well. Students can study by themselves and create their own works more efficiently.

## **Recommendations**

1. 3D paper model should be created by considering the appropriateness of contents, difficulties, age, likes, abilities and duration of students' interest when working.
2. Instructors should follow the problem solving procedures that are divided into problem understanding step, problem solving planning step, implementation step, and checking step for teaching and learning management method and answer.
3. Instructors should study further, try it out, and create other teaching materials in a broader manner.

Painting the scenery of the first students to study with going through the traditional media model 3 D paper model.

Student 1



Terrestrial landscapes

Painting the scenery of the first students to study through the media of 3 D paper model simulation

Student 1



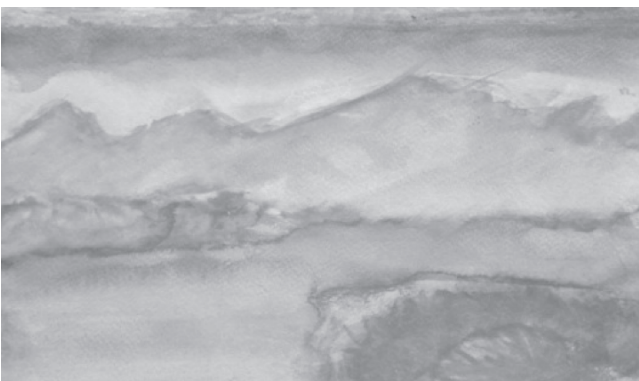
Terrestrial landscapes



Lands buildings



Lands buildings



Sea landscape



Sea landscape

Painting the scenery of the first students to study with going through the traditional media model 3 D paper model.

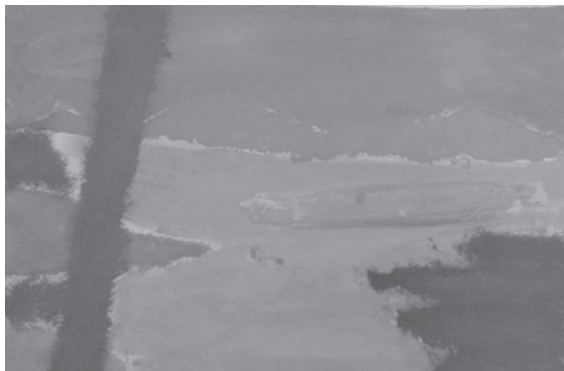
Student 2



Terrestrial landscapes



Lands buildings



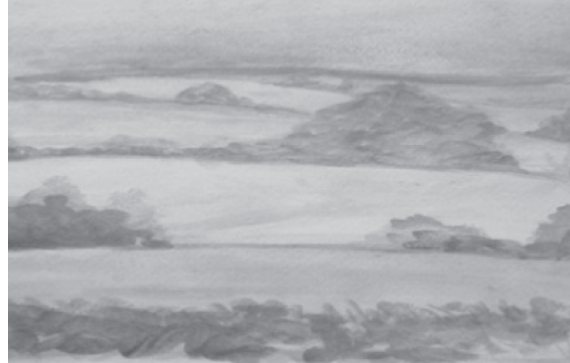
Sea landscape, Student 3



Terrestrial landscapes

Painting the scenery of the first students to study through the media of 3 D paper model simulation

Student 2



Terrestrial landscapes



Lands buildings



Sea landscape, Student 3



Terrestrial landscapes

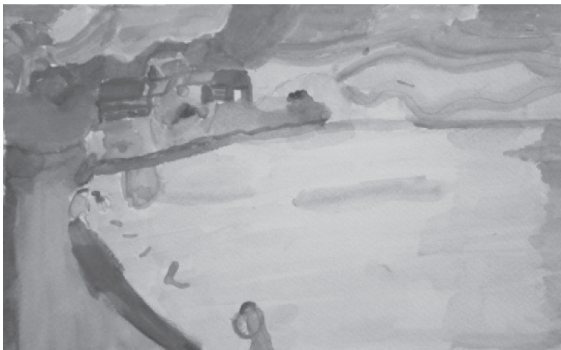


Painting the scenery of the first students to study with going through the traditional media model 3 D paper model.

Student 3



Lands buildings



Sea landscape, Student 4



Terrestrial landscapes



Lands buildings

Painting the scenery of the first students to study through the media of 3 D paper model simulation

Student 3



Lands buildings



Sea landscape, Student 4



Terrestrial landscapes

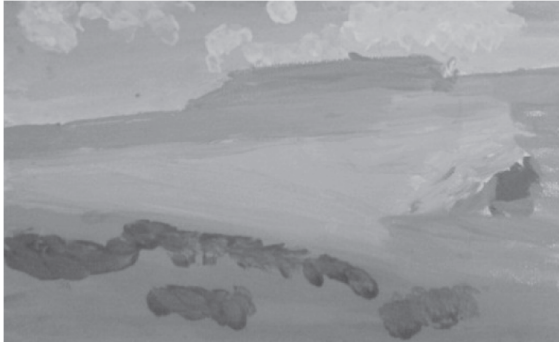


Lands buildings

Painting the scenery of the first students to study with going through the traditional media model 3 D paper model.

Painting the scenery of the first students to study through the media of 3 D paper model simulation

Student 4



Sea landscape, Student 5

Student 4



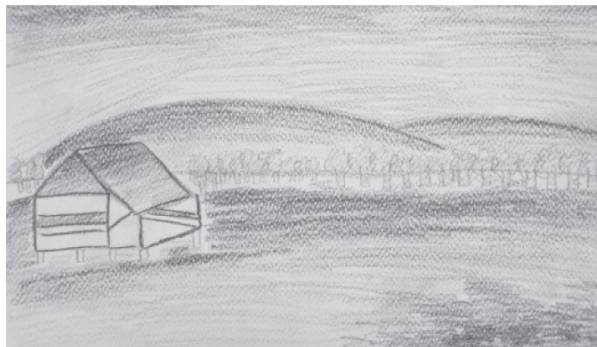
Sea landscape, Student 5



Terrestrial landscapes



Terrestrial landscapes



Lands buildings



Lands buildings



Sea landscape



Sea landscape

Figure 2. A table comparing the art works results of the control and test groups.

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