3D *KNOCKDOWN* HOUSE INNOVATION
DIGITAL-BASED AS A LEGACY
CULTURE IN OGAN ILIR

Fitrah Cyntha Dirna, Agus Cahyono, Hartono, Eko Sugiarto
UNIVERSITAS NEGERI SEMARANG
Email : cynthadirna@gmail.com

ABSTRACT

This research aims to develop a digital-based image design and produce a 3D miniature *Knockdown* house product as a cultural heritage in Ogan Ilir. This research includes development research that adopts the Barbara N. Flagg model. The research procedure starts from planning, design, production, and evaluation. The object of this research is the *Knockdown* House in Tanjung Batu Seberang Village. Data collection techniques used interviews, observations and documentary studies. Data analysis techniques consist of interview data analysis, observation data analysis and documentary study data analysis. The results of the study can be concluded that the digital-based image design is feasible, good, and attractive so that it can be realized into a 3D miniature *knockdown* house. The creativity of this knockdown house innovation is a manifestation of cultural preservation integrated with 21st century learning.

Keywords: *Knockdown* house, miniature, regional culture, 2-dimensional, 3-dimensional

CHAPTER 1. INTRODUCTION

The development of the 21st century world is characterized by the use of information and communication technology in all aspects of life, including in the learning process. Kemdikbud formulates that 21st century learning emphasizes the ability of students to find out from various sources, formulate problems, think analytically and cooperate and collaborate in solving problems (Litbang Kemdikbud, 2013). The challenge of realizing learners who are active, creative and able to develop their potential is not easy. To increase creativity, learners must be able to collaborate with others, dig up information by linking learning in everyday life through existing local cultural wisdom.

Thus, it is expected that every educational institution can provide an understanding of local wisdom and how to preserve and develop it by providing opportunities for students to express their ideas, imagine and create. Enhancing creativity is very important. Creativity can help students develop their talents and abilities. According to Umar Khayam (1981: 38-39), art is inseparable from society. As an important part of culture, art is an expression of the creativity of culture itself. Cultural art, better known as traditional art, is a form of art that originates and is rooted in the community environment where it grows and develops. Each traditional art in the regions has experienced different developments, it is very dependent on local conditions and the contact and influence of the environment (Suwaji Bastomi 1988: 16).

Ogan Ilir is one of the regencies in South Sumatra that has a lot of local cultural wisdom. The capital of Ogan Ilir district is Indralaya, which is geographically located closest to the city of Palembang. Local cultural wisdom that exists and can be developed in Ogan Ilir district, such as the characteristics and habits of the community that are often found, namely songket weaving, making *knockdown* houses, making kemplang crackers, making woven purun mats, making traditional clothing and household tools. However, at this time many students do not know the greatest wisdom of Ogan Ilir district, even over time they forget the culture and local wisdom that should be preserved instead began to be abandoned due to the progress of the times and the impact of technology. Many children become more fond of something modern, playing gadgets, online games, and not infrequently there are those who use technology deliberately to open and save pornographic sites. Technological advances seem to blind their eyes to explore and preserve existing culture. They are reluctant to learn tradition. They feel uncool if they learn traditions. And they don't feel cool if they learn traditions.

It is not uncommon in schools to learn less about the wisdom of the local culture around them, even prioritizing technological advances that are said to be "current". We often see many students who are able to memorize a number of songs of their favorite bands. There are also those who are experts in playing online games rather than learning about existing local cultures. This has a negative impact on the learning process at school. If it is not good at selecting the existing modernization flow, it is certain that the character of students will be easily influenced, students become indifferent, lazy to learn, feel bored learning cultural arts and immoral. Responding to phenomena like this, as a student, the researcher tries to find solutions to overcome the problems that occur by instilling awareness to always be proud, appreciate and love the culture around the place of residence. Based on this background, the researcher conducted a study with the title "3D Innovation of Digital-Based *Knockdown* Houses as Cultural Heritage in Ogan Ilir" with the following problem formulations: (1) How to develop a digital-based *knockdown* house design at

SMA Negeri 2 Indralaya Utara, (2) How to develop a 3-dimensional *knockdown* house design at SMA Negeri 2 Indralaya Utara.

The purpose of this research is to produce a *knockdown* house design in 2-dimensional digital form and in 3D miniature form (dimensions). This research is expected to provide benefits, among others: (1) For teachers, as a learning media for teachers to make it easier to deliver subject matter and can increase teacher knowledge, (2) For students, it can help students to become more skilled and creative in their work, (3) For other researchers, it can be a reference to continue to make fun learning innovations.

This research was conducted by reviewing the results of previous research and comparing them with the results of this study. Based on the research studied, there is no similar research object to what the author will research about "3D Innovation of Digital-Based *Knockdown* Houses as Cultural Heritage in Ogan Ilir". With the guidance of the Cultural Arts Teacher, the researcher wishes to innovate to create works inspired by the wisdom of existing local cultures, but still coexist with technological developments. It is hoped that after learning local culture, students will be more motivated to work, create and express, especially in learning fine arts and be able to preserve the cultural heritage of their ancestors.

CHAPTER 2. LITERATURE REVIEW

21st Century Learning

The 21st century is known to everyone as the century of knowledge which is the main foundation for various aspects of life. The development of the 21st century world is characterized by the use of information and communication technology in all aspects of life, including in the learning process. The development of technology has led to changes in the qualifications and competencies of the workforce. The world of work demands changes in competence, the ability to think critically, solve problems, collaborate is an important competency in entering 21st century life (Daryanto, 2017: 2-3). The 21st century is a century of knowledge, a century where information is widely spread and technology develops.

Definition of 2-dimensional and 3-dimensional

Definition of 2 Dimensions is an object that only has two elements, namely, the length element and the width element. This 2-dimensional artwork can only be seen from a certain side, for example a sketch or drawing. Drawing art is a two-dimensional work of art made on the surface of paper or other media. 3D is an object that has length, width and height that has a shape. 3D is not only used in math and physics but also in the fields of graphics, art, animation, computers and others. In simple language, this 3-dimensional artwork is a work that has volume and occupies a space, so that this space element is the difference between 2-dimensional and 3-dimensional artworks.

Traditional Traditional House of South Sumatra

In South Sumatra, there are several types of traditional houses that are used as residences. The most recognizable traditional architecture is the Limas traditional house. This house is called a Limas house because the shape of the roof resembles a severed pyramid.

Traditional South Sumatra houses contain cultural and historical values. This can be seen from the architectural forms and decorations that are closely related to the belief system. Judging from the style in its appearance, it certainly cannot be separated from factors involving the way of life, economy, surrounding nature, climate and culture.

Camscanner

Technological sophistication is growing rapidly and can be utilized to simplify and save costs, such as cameras on *smartphones* replacing larger *scanner* devices. This camera can be used to perform the same function as a *scanner*, which is to read documents by detecting images on documents in the form of *digital* images. The scan application on smartphones has many application features, one of which is *Camscanner* which can convert images into pdf and txt with input of computer writing printouts.

Sketchbook

SketchBook is a favorite drawing app. It's very intuitive, works well on all android smartphones, and most importantly, it features layers. The features hidden in this android app are for drawing or painting and also for sketching and coloring.

Definition of Miniature

Miniature is one type of simplified model in terms of how it is made. Meanwhile, according to Daryanto (2010: 30) states that artificial media is also called a model. Models are 3-dimensional objects that are representations of real objects (Rohman, 2013: 132).

Creativity

Creativity is a person's ability to produce something new, both in the form of ideas and real work that is relatively different from what has existed before (Supriyadi, 1994: 3). The process of student creativity is usually initiated by the example of the teacher's creative process. Teaching philosophies that encourage children's creativity include: providing learning experiences that are close to the real world. Students have creativity, it is just a matter of optimizing it (Supriyanto, 2004: 23).

Definition of Local Wisdom

Local wisdom is the ability to absorb foreign cultures that come selectively, meaning that it is adjusted to the local atmosphere and conditions (Atmodjo, 1986: 37).

CHAPTER 3. METHODOLOGY

Research   Methods

This study uses the research and development method *(Research and Development)*. Based on the information contained in the Indonesian National Encyclopaedia (1997:375) it is stated, "Research and development includes a systematic and intensive study of a problem or product (research), as well as efforts to direct the results of the study to produce a product, service or process (development).

Furthermore, it is also stated that there are four main objectives of the R&D program, namely: (1) improving the quality of existing products; (2) developing new products; (3) improving production methods; (4) planning new business fields or businesses for the company (Indonesian National Encyclopedia, 1997:375).

Development Approach

The development used in this study refers to the *Barbara N. Flagg* (1990) development model. Flagg's development model (1990) consists of 4 phases, namely *phase (*1) *Planning, phase* (2) *Design; phase (*3) *Production*; (4) *Implementation.*

The selection of the Flagg model is intended because this model is one of the models in developing a tool, media, or any product in learning.

Research Procedure

The stages of this research procedure are depicted in the chart below, which is inspired and modified from Barbara N. Flagg's chart.

- Research
- Information gathering

Need Assessment

Planning

Phase 1

- Image Design
- Camscanner Process
- Coloring Process

Pre-production Formative Evaluation
Phase 2

Design

3D miniature making

Production Formative Evaluation

Phase 3

Production

- expert review
- one to one

Implementation Formative Evaluation
Implementation

Phase 4

Modified Steps of Research and Development

In accordance with the Flagg development model, the explanation of the work steps of this research consists of 4 stages as follows:

1. Planning Stage
    1) Needs Analysis

        In this initial stage, a needs assessment was conducted to get an overview of the conditions in the field. This was done with the following steps:

        a) Make observations about local cultural wisdom in the school area

            This is done to find out what local cultural wisdom exists in Ogan Ilir Regency. Through direct observation, researchers can find out about objects that can be used as research material to be developed. The object of this research is the *Knockdown* House from Tanjung Batu Seberang village, Ogan Ilir Regency, South Sumatra Province. The *Knockdown* House is one of the local cultural wisdoms that has been famous for a long time.

        b). Analyze the object to be studied

            This activity is carried out to find out what problems or phenomena occur in the preservation and development of local cultural potential in connection with Cultural Arts learning, especially Fine Arts material.

        c). Conducting interviews with teachers

In this activity, researchers interviewed Cultural Arts teachers to ask for direction and guidance on how to respond to education in modern times so as not to be carried away by modernization.

d). Conducting interviews with informants

Interviews were conducted with knockdown house craftsmen who aimed to find out how to make *knockdown houses*. What problems or obstacles exist in the field regarding the manufacture of *knockdown* houses.

2. Design Stage

This stage is also called the pre-production stage. At this stage the researcher designs the shape of the knockdown house, which includes: (1) drawing/sketch design; (2) camscanner process; (3) coloring process.

The programs used in making this design are the Camscanner and Sketchbook applications that have been downloaded through the play store application on android. After the design of this product is complete, it is referred to as the initial product, which is evaluated for products that will be developed at the next stage.

3. Production Stage

After revisions are made at the design stage, at this stage the process of making 3D (three-dimensional) miniatures is carried out. The next step is the *finishing* process.

4. Evaluation Stage (Implementation)

This stage is the real step to implement the results of the 3-dimensional miniature that has been made. That is, at this stage everything that has been developed is set in such a way that it is in accordance with its role or function so that it can be implemented in accordance with the design made.

To find out the weaknesses and strengths, a stage is needed that can be used in conducting research. Researchers refer to formative evaluation according to *Tessmer*, which divides five stages in the formative evaluation procedure, which can be seen in the following figure:

Expert review

Field test

Self Evaluation

Small group

Revised

One to one

Formative Research Design Flow Chart (Tessmer, 1993: 16)

Based on the flow above, researchers only use 2 steps, namely self evaluation, and expert review. At this stage the product that has been made is then evaluated. Researchers asked for comments or testimonials from teachers. The information obtained during the evaluation was then drawn conclusions as a basis for improving the product at the next stage. At this stage, other steps are not carried out because this research is a design that aims not to test anything. Comments from the self-evaluation and expert review were then drawn conclusions as a basis for improving the image design to become a 3D (three-dimensional) miniature product.

1). Self-evaluation

At this stage the researcher checks the design himself, whether it is good or not, as well as the color combination whether it is appropriate or not, whether it is interesting or not. After it was deemed sufficient, the next evaluation stage was continued, namely expert review to find out the strengths and weaknesses of the product. The existing weaknesses will be revised to get a good and attractive product, so that it can be utilized by other students in learning.

2). Expert evaluation

Furthermore, at the expert review stage, the resulting product will be evaluated by teachers whose expertise is in the field of Art. This information will be obtained by conducting an interview in which the Fine Arts teacher's comments will be used as a reference for revising the product.

The evaluated product is an initial product called the first prototype. The instrument used in obtaining product validity is an interview guideline.

Data Collection Technique

Data were collected through observation, interviews and documentary studies.

1. Interview

Interviews are used as a data collection technique, if the researcher will conduct a preliminary study to find problems that must be researched and also if the researcher will know things from respondents that are more in-depth (Sugiyono, 2009: 194). In this study, researchers conducted interviews with friends, teachers and informants.

2. Observation

Djaali and Muljono (2004: 23), observation is a way of collecting information materials by systematically observing and recording the phenomena that are the object of observation.

In this study, observations were made by visiting the research site (field) directly to find out the state of the *Knockdown* House object to be studied. The stages carried out in carrying out observations, namely: (1) The author makes a visit to Tanjung Batu Seberang village and asks questions to *Knockdown* House craftsmen about the current state or development of the Ogan Ilir *knockdown house*, the advantages and disadvantages of making *knockdown* houses. (2) The author sees and studies the ways of making *knockdwon* houses, starting from the shape, type of wood, quality and size.

3. Documentary Study

According to Sugiyono (2008: 83) document study is a complement to the use of observation and interview methods in qualitative research. Even the credibility of the research results will be higher if it involves or uses this document study in qualitative research methods.

In order to make the data more accurate, this research must also use documentation techniques as a way of collecting data. Through documentary studies, literature reviews, written documents, drawings or photographs used to support research are collected.

Data Analysis Technique

Data analysis in research is carried out interactively. According to Sugiyono (2010: 246) that activities in qualitative data analysis are carried out interactively and take place continuously until completion. This means that in analyzing the data, researchers are directly involved in explaining and summarizing the data obtained by linking the theory used.

Interview Data Analysis

To find out the advantages and disadvantages of the product to be made, interviews were held with *knockdown* house craftsmen, this activity was carried out to obtain accurate information about how to make *knockdown houses*. After obtaining information and manufacturing techniques, the researcher then tested the initial product. After the product was finished, the researcher conducted an interview with the Cultural Arts Teacher to ask for opinions about the product that had been developed. The results of all aspects of the assessment on the interview guideline sheet were analyzed descriptively qualitatively.

Observation Data Analysis

Observation data is obtained from the observation process in the field directly using a checklist sheet, this activity is carried out to see the advantages and disadvantages of the product (miniature) made.

Documentation Study Data Analysis

Documentation data is used to collect data and then reviewed. All data generated will be explained descriptively qualitatively.

CHAPTER 4. RESULTS AND DISCUSSION

Research Results
 1. **Description of Research Implementation**

This research was conducted from May 2019 to August 2019, starting with observations to Tanjung Batu Seberang village, Ogan Ilir Regency. The object under study is the *Knockdown* House. In this activity, interviews and documentation were conducted with *knockdown* house craftsmen to obtain data validity for the smooth writing of research reports.
 2. **Development Stage**

In this research, there are four stages carried out based on the *Flagg* Development model, namely: the *planning stage (planinng)*, the *design stage (design), the* production stage *(production)* and the evaluation stage *(implementation)*.
 1). **Planning Stage Results**

In this planning stage, the first thing that researchers do is conduct a needs analysis which includes interviews with subject teachers and informants. Based on the results of interviews conducted with Cultural Arts teachers, some students prefer to play games because they are more interesting, they cannot be separated from gadgets. Students today tend to prioritize technology over learning culture, especially to preserve the culture of

their ancestors' heritage. In Cultural Arts learning today must prioritize students' skills and independence in order to be able to compete in the world along with the development of 21st century technology. Interesting learning is learning how to package digital technology which is currently loved by students to become a necessity in learning that can produce something positive or useful.

The same statement is also felt by the craftsmen of unloading houses in Tanjung Batu Seberang village, nowadays it is rare for generations to learn to make unloading houses directly. Most children today prefer to play games rather than learn culture. Whereas the wisdom of *knockdown* houses owned by Ogan Ilir district is very famous to foreign countries. In addition to its unique and attractive shape, the quality that has been tested and the manufacture of which is quite complicated, is also an advantage of this knockdown house. Not everyone can make a *knockdown* house design, and can only be done by experts in Tanjung Batu Seberang Village. Therefore, the hope of the craftsmen is that there needs to be a next generation who wants to preserve the existing local cultural wisdom so that it remains famous throughout the country and can become an income for a more decent life.

The researcher made observations and then was guided by the Cultural Arts teacher to try to innovate and be creative in presenting Cultural Arts learning, especially Fine Arts material that is fun, still preserves culture but is integrated with 21st century learning. This research was conducted to divert students' addiction to *gadgets* from negative things to more positive things.

Interview with *Knockdown* House Craftsmen
(Source: Personal Documentation)

2). **Results of the *Design* Stage**

At this stage the researcher designs the initial product to be developed. This stage contains the design which includes:

a). Drawing Design

In this activity, researchers observed the various results of the form of unloading houses in Tanjung Batu Seberang Village. Based on the results of interviews with unloading house craftsmen, information was obtained that the types of unloading houses in Ogan Ilir consisted of: hanging garang shed type house, long garang shed type house, two staircase shed type house, one staircase shed type house,

integration garang shed type house, double ridge plajawan type house and raft house. The following is an example of an unassembled house that the author managed to document.

Figure 4. Two-Stair Integration Garang Shed Type House
(Source: Personal Documentation)

After exploring the village of Tanjung Batu Seberang, researchers observed and analyzed several forms of *knockdown* houses, and then began to design the desired *knockdown* house drawings, Researchers chose a simple design form and combined it with typical types of South Sumatra and Ogan Ilir houses. The researcher made a long garang warehouse type house with one stair integration, with a Limas-shaped roof.

Figure 5. Image design before revisionFigure 6. Image design after revision
(Source: Personal Documentation)   **(Source: Personal Documentation)**

The following are the results of the image design before revision and after revision

Figure 7. Before Revision   **Figure 8. After Revision**

In the first product trial, the researcher tried to make a house using ice cream sticks.

Figure 9. First prototype
(Source: Personal Documentation)

The result of the drawing design is the inspiration itself. From the results of self-evaluation, the design of the resulting image was then improved because according to the researcher it was still not attractive, the size of the house had not been conceptualized neatly, the type of wood used was not strong and durable, the shape of the house was not in accordance with the criteria for the distinctiveness or characteristics of the community in the Tanjung Batu Seberang area. After the revision, the researcher found the right design results and as desired.

In the design process, for beginners, it can be done manually or for those who are advanced by *sketching* directly on the *SketchBook draw and paint* application using a finger or pen drawing. In this study, researchers chose an easy and simple way that all beginners can do, namely by doing manual drawing techniques on paper. This was done to facilitate the process of making design plans because drawing using fingers was not as easy as imagined. Furthermore, the image is processed and entered into an android or smartphone.

b).   Camscanner Process

In this activity, the draft images that have been designed are then photographed using the camera on the *Camscanner* application that has been downloaded through the *Google Play Store* for Android or the *AppStore* for *iPhone*. Next, run CamScanner by pressing tap the camera icon to take a picture of the document or *Knockdown* house. Set the position of the image and edit it as desired, then tap the check icon to process to the next stage.

c).   Coloring Process

In the coloring stage, the application used is *Sketchbook - draw and paint* which can be downloaded from the *Google Play Store*.
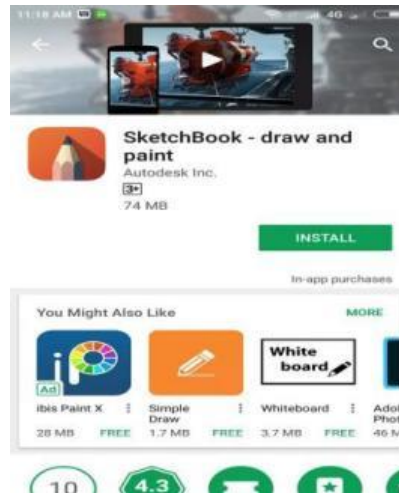
Figure 10. *Sketchbook* application
(Source: Personal Documentation)

The work steps for using the *Sketchbook* application can be seen in the table below:

Table 1. Sketchbook App Work Steps

No.	Work Steps	Image
1	Once installed, run the app for the first time. This is how the Sketchbook front interface looks like.	
2.	The next step is to create a new sketch or a new worksheet if you want to draw directly on android.How to tap the leftmost menu marked with a red dot, then tap **New Sketch.** Or if the image is manually selected, then tap **Gallery**	

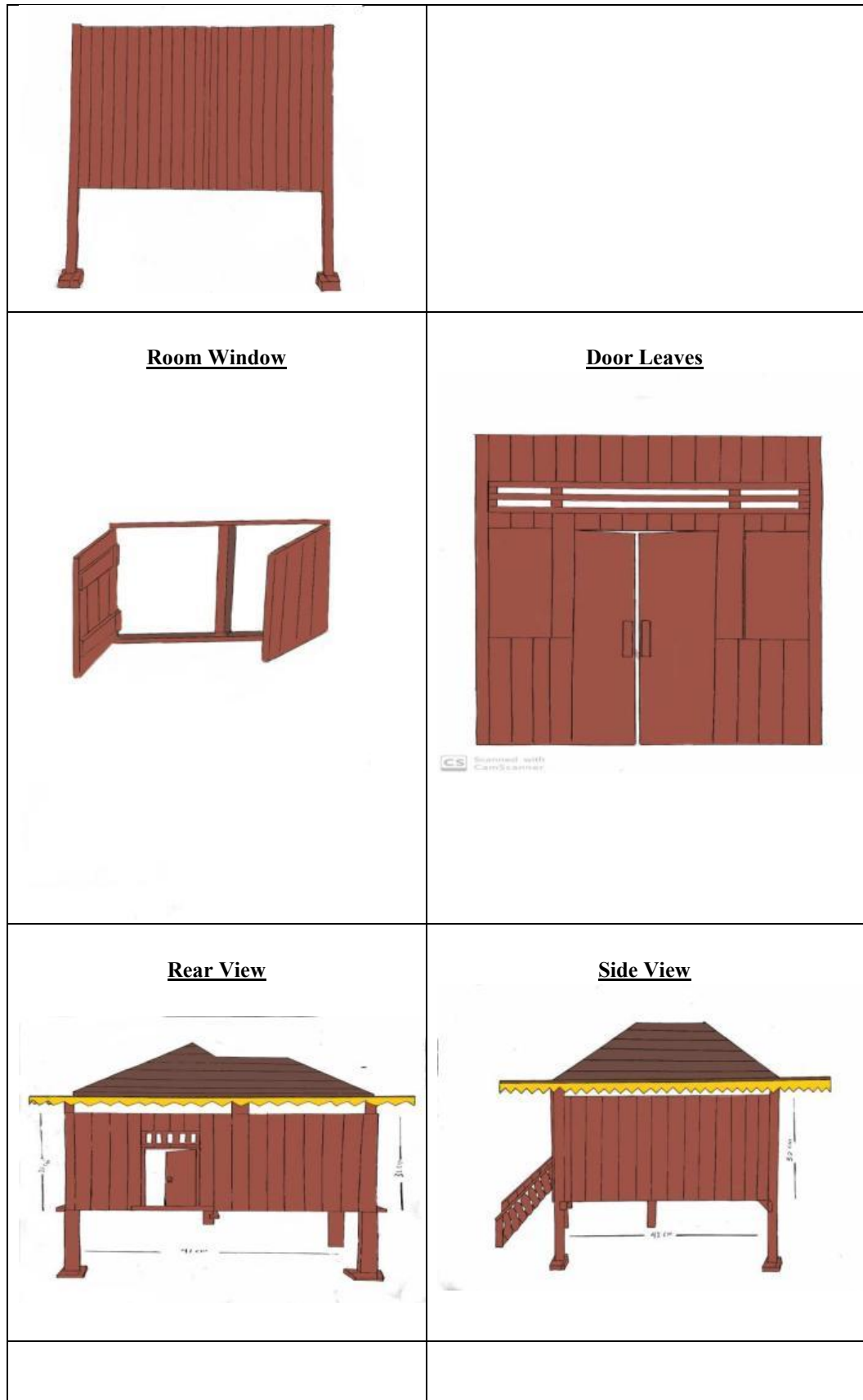|		
3.	Next select **New From Image**	
4.	Next is to select an image stored in the Gallery	
5.	The image that has been selected from the gallery will appear next.	
5.	The next step is to choose a color for the base pattern. But by *default, the* app has chosen black. The coloring process begins	

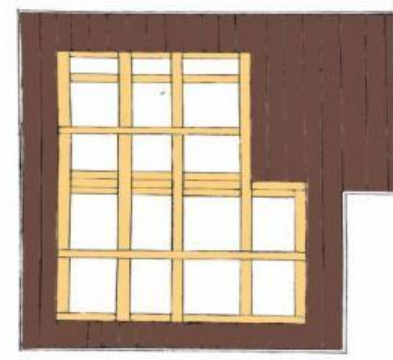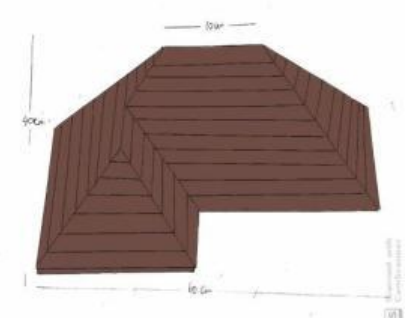| 6.	The drawing design has gone through the coloring process	
7.	If all the elements ranging from color, text and others have been fulfilled, the next is the process of saving the work into memory. Tap the leftmost button and select Gallery, then *tap* **Save Current Sketch.** Give a name and you're done.	
8.	First sketch saved successfully. In the panel, Sketchbook also provides several steps that can be considered such as sharing your scribbles, creating duplicates, converting them to PSD format and so on.	

3). Revised

        After all the designs were revised, the next step was to determine the length, width and height, which would be used as measurements in making 3D miniature houses. The size of the house that is used as a standard in the manufacture of unloading houses, is a miniature house size of 40cm x 60cm. The provisions of this house size, researchers take represent the size of the original house which is usually made by craftsmen with a size of 4m x 6m. After determining the size of the miniature house to be made, the researchers then designed the basic parts of the house starting from making poles, floors, walls, doors, windows, roofs and stairs. All designs are made separately and can be assembled. The following is a table of the results of the digital design of the *Knockdown* house.

Table 2: Digital Design of *Knockdown* House

Mast	Wall Design
Outer Wall	**1 set External wall**

Room Window	Door Leaves
Rear View	Side View

	House Plan
Tampak Tangga	TERAS RUANG TAMU & RUANG KELUARGA KAMAR
Roof Ridge	**Roof**
House Front View	

3). Production Stage Results

      After making revisions at the design stage, the next step is to create a product as a result of the initial product that has been developed. The result of this initial design is called a *prototype*. The *prototype was* re-evaluated regarding suitability and ease of manufacture. After going through a series of improvements, the next step is to create or produce 3D miniatures. To make this *knockdown* miniature house, the type of wood used is Jelitung wood, this wood was chosen because the material is cheap, lightweight and easy to shape. The materials and tools prepared are: wood, saws, burning glue, white glue (fox), brushes, paint sprayer, gold color oil paint, thinner, sandpaper, screwdriver and curter.
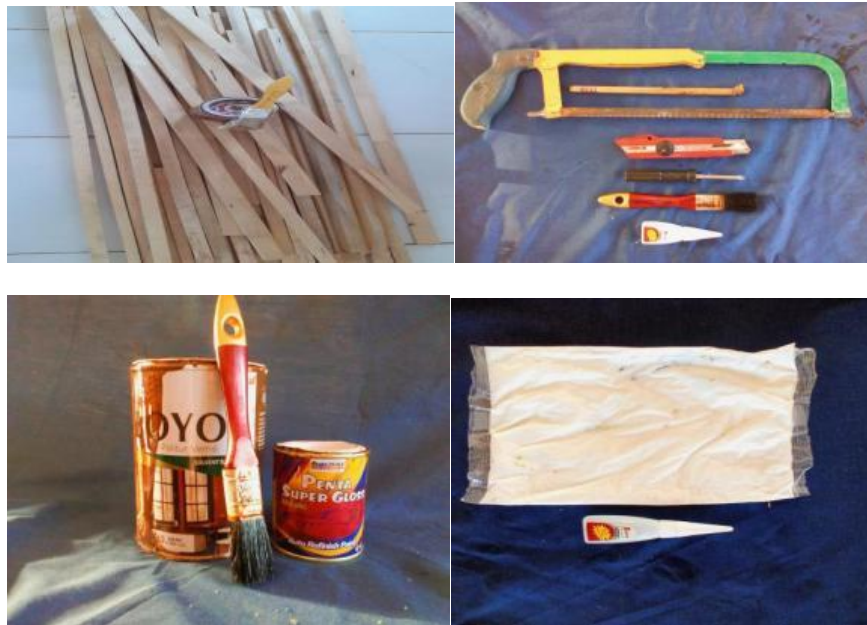
Materials and Tools for Making *Knockdown* Houses
(Source: Personal Documentation)

In this activity, the product developed is a product that has been considered good by the Cultural Arts Teacher who in this case acts as an *expert review*. with unity that includes shape, space, and color integration. From the results of the drawing design that has been made, based on direction and input from several teachers, the team began to make miniature products. The finished product was then sanded to make the texture of the wood smoother and flatter.

Making a miniature *Knockdown* House
(Source: Personal Documentation)

Figure 13. Knockdown House Shape
(Source: Personal Documentation)

After the product is assembled, the next is the coloring or painting process. The color selection is adjusted to the concept that has been determined. In the painting process,

patience and accuracy are needed, the paint should not be too thick because it will make the coloring overlap and be untidy. The painting technique must also be unidirectional.

Figure 14: Researchers perform the painting process
(Source: Personal Documentation)

Next, the team with the help of the teacher began to assemble or reassemble the house that had been disassembled to make it whole again. The pieces of the house that have been painted are then installed according to the location of the sequence.

Figure 15: *Knockdown* House Assembly Guidance
(Source: Personal Documentation)

Figure 16. *Knockdown* House Installation
(Source: Personal Documentation)

From each series of processes carried out, the 3D miniature unloading house products that have been installed are then given ornaments to beautify the final result of

the miniature that has been produced. The decoration is in the form of synthetic grass, decorative flowers, artificial grass made from sawdust and has been given cake coloring. The inside of the house is decorated with wooden cabinets, beds, tables and chairs. Below is the 3D result of the Ogan Ilir *knockdown* house innovation.

Figure 17. 3D Miniature Knockdown House Innovation
(Source: Personal Documentation)

d). Evaluation results

The results of the revised drawing design based on *self-evaluation* and *expert review*, where at this evaluation stage, the researcher only draws conclusions from the results of personal or self-observation, while in the *expert review* evaluation from the results of interviews with Cultural Arts teachers. Furthermore, testimonials or comments from Cultural Arts Teachers are used as conclusions for improving 3D miniature products (three dimensions) of *Knockdown* houses.

Discussion

The research conducted is a development research. This development research aims to produce a 3D miniature product of a *knockdown* house as a cultural heritage in Ogan Ilir Regency. The procedure in this development research is carried out with four stages based on the *Flagg* development model, namely the *planning stage, design stage, production* stage, and *implementation stage.*

At the evaluation stage, researchers used *Tessmer's* formative evaluation model which consists of *self evaluation*, *expert review*, *one to one, small group* and *field test* stages. However, researchers only used 2 steps, namely *self evaluation,* and *expert review.* At this stage the product that has been made is then evaluated. Researchers ask for comments or testimonials from teachers who have expertise in the field of Fine Arts. The information obtained during the testimony was then drawn conclusions as a basis for improving the product at a later stage.

According to researchers' observations, the production of *knockdown houses* in the field is very advanced, the marketing of *knockdown* houses in Tanjung Batu Seberang Village has been famous to the mancangera. However, in terms of cultural preservation, there is still very little interest from students or young people today. 21st century learning distracts students who seem

to be carried away by modernization so that they have no interest in learning culture or preserving their culture.

At the 3D product development stage, researchers designed the initial product image design manually, then the images that had been designed were entered into the android through the camscanner application for the coloring process using the *Sketchbook* application that had been downloaded from the *Google Play Store*. Furthermore, after having a draft image, the researcher tries to design a 3D *knockdown* house using ice cream sticks. The product produced from this production stage is called the first prototype. To get a good and attractive design, researchers conducted an expert review evaluation, in this case, a Cultural Arts teacher who has expertise in the field of fine arts was appointed to evaluate the first prototype.

Based on the results of the expert review evaluation, the first prototype designed is not perfect, the type of material in the form of ice cream sticks is less attractive and has less aesthetic value to be made into a 3D knockdown house. It is necessary to find a type of wood that is good and can be used as a material for making *knockdown* houses. Therefore, it is necessary to revise the first prototype to produce a better and more attractive final product. The testimonials became the basis for researchers to make product improvements.

CHAPTER 5. CONCLUSION AND SUGGESTIONS

Conclusion

Based on the results of the research that has been conducted on 3D Innovation of Digital-Based *Knockdown* Houses as Cultural Heritage in Ogan Ilir, it can be concluded as follows:

1. The development results of the digital-based *knockdown* house have been revised.
   The revision results have been carried out by self evaluation and *expert review of* 3D miniatures with a fairly good and interesting assessment. This can be seen from the teacher's comments during the evaluation.
2. The results of the development of *knockdown* houses into 3D products were declared successful and interesting. This miniature product is a work of art born from the creativity of researchers as the next generation who must continue to preserve the cultural heritage of ancestors even though they must continue to follow the times. 21st century learning must remain integrated and coexist with regional culture so that there is no shift in the flow of modernization.

Advice

Based on the research results and conclusions above, the researcher suggests the following:

1. For students to use digital technology as an alternative to learning and doing positive things. As well as having a high spirit of creativity, and being able to preserve their regional culture side by side with technological sophistication.
2. For schools to facilitate students in increasing competence and creativity, as well as improving the quality of learning in line with the development of 21st century technology.
3. So that researchers can develop as enrichment material and add better knowledge.

ACKNOWLEDGMENTS

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APPENDIX

1. **Photo of *Knockdown* House Design Drawing**
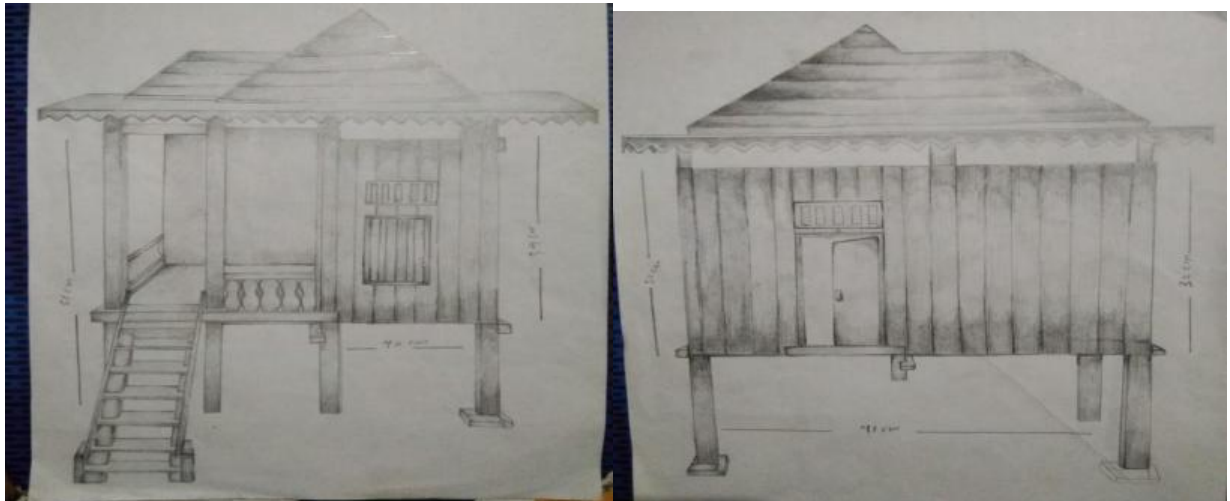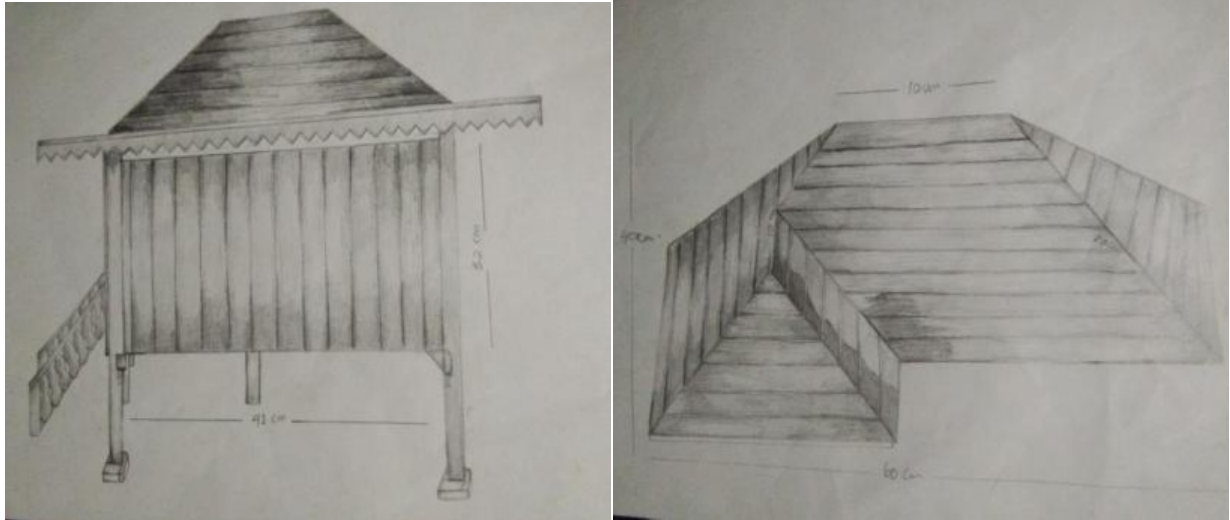
2. Photo of Miniature *Knockdown* House

3. Photo of Documentary Study Activity

INTERVIEW GUIDE FOR *KNOCKDOWN* HOUSE CRAFTSMEN
WHEN PLANNING

Name   : Sarmin

Jobs   : Handyman

Address   : Tanjung Batu Sebrang Village

1. What is the potential of Local Culture in Ogan Ilir Regency?

2. What are the livelihoods of the people of Tanjung Batu Sebrang and Tanjung Batu Petai villages?

3. What do you think are the advantages and disadvantages of knockdown houses?

4. What are the types of knockdown houses?

5. Is there a size requirement in making this knockdown house?

6. What is the typical shape of the Ogan Ilir traditional house?

7. Does the manufacture of knockdown houses still have many enthusiasts?

8. What do you think about the response of young people today, do they still have an interest in making knockdown houses?

9. What do you think about the preservation condition of the Knockdown House?

10. What efforts can you make to continue to preserve and maintain the Local Culture found in Tanjung Batu Village?

INTERVIEW GUIDELINES

FOR TEACHERS (EXPERT REVIEW)

Name   : Denny Dalton Ketaren, S.Pd.

Occupation   : Fine Arts Teacher

Address   : Palembang

NO	Aspect asked	YES	NOT
1	Do you think the people of Ogan Ilir Regency have preserved, developed and utilized local culture in accordance with the advancement of science and technology?	√	
2	Is the coloring process through Autodesk Sketchbook app difficult?		√
3	Does the coloring of the Autodesk Sketchbook app take a long time?		√
4	Do you think the coloring process that we did on this miniature *Knockdown* house is interesting enough to be presented at the national level?		√
5	Do you think this is an interesting theme to research?		√
6	Does it take a long time to make a *Knockdown* miniature house?		√
7	Do you think our theme will awaken the spirit of students to preserve the culture of Ogan Ilir Regency?		√
8	Is the color we choose for the miniature Knockdown house in accordance with the characteristics of Ogan Ilir Regency?		√
9	Is the design/drawing of this Knockdown House good and attractive?		√
10	Are the materials used in making this miniature appropriate?		√

DOCUMENTATION GUIDELINES

Activity Documentation : *Knockdown* **House Innovation in Ogan Ilir**

Day/Date of Implementation : **June 02, 2019**

No.	Activities	Document Type	Document Existence

			There is	No
1.	Searching for reference materials, data and literature reviews for research	- Reference book - Photo.	√ √	
2.	Interviewing *knockdwn* house craftsmen	- Biodata - Recorded interviews - Interview guidelines - Photo.	√ √ √ √	
3.	Outcome assessment conducted by Fine Arts teacher (expert review)	- Biodata - Interview Guideline Sheet - Photo.	√ √ √	