Gamification the Learning of Manual Craftsmanship
Batik Lasem Process through Board Games

Bayu Prakoso Dirgantoro
Binus Northumbria School of Design – Graphic Design and New Media
Bina Nusantara University
Jakarta, Indonesia
bdirgantoro@binus.edu

**Abstract**— Lasem is a city on the north coast of Java Island, Indonesia. Lasem city is an acculturation between Chinese, Moslem and Javanese culture. Lasem is one of the oldest batik production centers in Java. Batik Lasem need to be preserved because it will extinct due to the lack of the interest from the young generation to preserve the technique or create new motives, as well as continuing manufacturing the Batik Lasem. To increase the awareness and interest of young generation about this culture and products, authors aim to protect this preservation through board games that created for young generation in Indonesia. Authors selected board game as a media to introduce the culture of Lasem because using games as an educational tool provides opportunities for deeper learning (MacKay, 2013). The research started with exploring the heritage culture focusing on batik process and motives, theory of educational games and design theory. The research methodology done through qualitative methods: in-depth interviews, testing board games to the targeted market, literature about games as an educational tool. The objectives of this board game are to create a fun and inspired game for young generation with significant educational value about the culture heritage. This game can be continuing and expanding with other cities in Indonesia and it is very possible to create series of the fun educational games that can tell the beauty of culture that Indonesia has. After several testing processes and designing the board game, the test results in understanding the batik process through game is far more interesting compared to traditional learning method. The idea of simulating technical process through gamification shows a great potential of alternative teaching methodology.

**Keywords**— Lasem, cultural, heritage, board game, batik, design

I. INTRODUCTION

Lasem is a second largest district in Rembang, Central Java, Indonesia. Rembang has a great history related to ethnic Chinese in Indonesia and believed to be the first time of the Chinese community landed in Indonesia. Lasem is also known as "little China" because it is the beginning of the landing Chinese population in Java. Lasem known also as Heritage City because a lot of the discovery of heritage sites and a distinctive culture attached to the city of Lasem heritage itself. Not only Chinese culture as the main culture that influenced Lasem culture, but also acculturation between Moslem and Javanese culture. The population of Lasem is in total of 50,936 people in 2017 and has an area of approximately 45.04 square kilometers[1]. Preserving Lasem as a heritage and cultural city is a very important message for Indonesian young generation to aware and take action in avoiding the extinct of the Batik Lasem as a cultural heritage.

II. BATIK LASEM

Batik Lasem is very famous because of the characteristics as beautiful coastal batik with a bold coloring and have a lot of varieties in design. Lasem is one of the oldest batik producer centers in Java. Through the cultural acculturation, Lasem produce Batik with a mixed culture motif using manual craftmanship during the production process. Motifs in Batik Lasem got a lot of Chinese cultural influences, especially in the form of legendary creatures, such as phoenix, as well as various equipment such as fans. Lasem Batik is famous for its distinctive red color called picic getih. Apart from the influence of Chinese culture, Batik Lasem can also be identified and distinguished from batik from other regions in Indonesia in term of the motive type and composition. The motif often found in Batik Lasem, can be used to identify the origin of batik itself comes from the social and geographical aspects of Lasem city. Some types of motifs that can be found are: Latohan, Bledak Kawista, Ringgit Mountain, and Watu Pecah.

Fig. 1 Batik with Watu Pecah motif (left) and Batik with Latohan motif (right).

Watu Pecah motif consists of a group of circular shapes that are often left empty. These shapes resemble stones that have been solved using only traditional tools. Watu Pecah motif became a reminder of the suffering of the people in building the road from Anyer to Panarukan during the Dutch colonial era. At that time Governor-General Daendels forced the Javanese to work as stone breakers to make their way. If the people cannot finish their work then they will be severely punished [2].
Especially if the fabric used is a silk fabric, which requires special treatment techniques due to the characteristics of the fabric. Batik making materials are:

- Cantik, is a candle stationery used to cover batik patterns, so it functions like a pencil for a candle
- Pencil pattern
- White mori fabrics are usually silk fabrics or cotton fabrics
- Night candle (wax)
- Stove or night candle heater (wax)
- Fabric dye

**Batik Tulis** is batik made manually craftsmanship by hand. The process of making batik is a process that requires high level of technique, precision and patience. The process of making batik is done manually by human skilled hands without using the machine. Because everything is done manually then the price of batik Lasem is one of the most expensive types of batik from all types of batik in Indonesia. The combination of expensive silk fabrics with manual process making techniques without the use of machines, added in value of the product, that mostly bought by the executives to show the class prestige. The process of making batik takes up to 1 month of workmanship. Especially if the fabric used is a silk fabric, which requires

Bledak Kawista motif is taken from local fruit namely the Kawis fruit. The shape of the motif symbolizes the shape and texture of the Kawista fruit, which is stylized from the original fruit itself. Ringgit Mountain is considered a classical motif in Lasem because this motif has a symbolic meaning of the pile (gunungan) wealth.

Latohan motif is inspired from the latoh plant (Caulerpa racemosa). Latohan is commonly used as a food source.

Based on the interviews conducted and one of it to the Batik Lasem expert and crafter Mr. Sigit [2], he stated that batik Lasem exist since the 14th century. He mentioned that younger generation, especially young women- does not want to continue the work of their mother as a batik crafter because they found a better and promising job out city. This is really worrying about the present of Batik Lasem in the future.

The research questions for this paper is focusing on how can effective learning about culture will be achieve through board game and what are factors to be focus in creating educational board game? The Objective of this paper is to increase the awareness of young generation about the Lasem culture, authors would like to protect this preservation through board game that created for young generation in Indonesia to increase their awareness about their culture. Authors selected board game as a media to introducing the city of Lasem because using games as an educational tool provides opportunities for deeper learning [3]. In this project the authors attempt to lay out an aesthetic approach to design an interactive media that promotes one of Indonesian heritage culture that can be applied as a series for other cities.

**III. THE PROCESS OF HAND DRAWING BATIK LASEM**

Batik Tulis is batik made manually craftsmanship by hand. The process of making batik is a process that requires high level of technique, precision and patience. The process of making batik is done manually by human skilled hands without using the machine. Because everything is done manually then the price of batik Lasem is one of the most expensive types of batik from all types of batik in Indonesia. The combination of expensive silk fabrics with manual process making techniques without the use of machines, added in value of the product, that mostly bought by the executives to show the class prestige. The process of making batik takes up to 1 month of workmanship. Especially if the fabric used is a silk fabric, which requires

![Fig. 2 Batik with Bledak Kawista motif (left) and Batik with Ringgit Mountain motif (right).](image)

![Fig. 3 Batik making tools, canting, candle, fabric dyed, wax and fabric. Source: [1]](image)

**Process and technique of making batik**

1. The process of making batik is to draw the desired pattern by using pencil pattern.
2. The next technique is the process of covering the image pattern with wax. The purpose of the wax coating process in the pattern is so that the part of the pattern that is exposed to the wax will remain white. Wax processed with heated (boiled) on the stove. This technique needs to be careful and use a small fire because the wax candle is flammable when in contact with fire. After the wax melts then put into canting (candle stationery). Blown off so as not to overheat which can damage the fabric. Then inserted into the fabric part of the pattern that will remain white. When coating the fine fabrics, lightly blow the wax coated part of the night to dry.
3. After the wax coating process finishes, dye will be applied to the fabric. Dyeing techniques are widely used because of the practical method. Then dried in the sun to dry.
4. Once dry, repeat the wax coating process as in the second point. The use of this second wax coating to cover the light-colored part to keep it colored. The second process will be made until the fourth process is done repeatedly for each color desired.
5. After finished the technical coloring on the cloth in making this batik, then the last part by doing technical "Peloroan", the technique of the release of wax layer of wax cloth.
IV. GAMES IN EDUCATION

Games and especially educational games are one of the techniques and procedures that the lecturer may use in teaching. Games also lend themselves well to revision exercises helping learners recall material in a pleasant, entertaining way. The advantages of games should also be considered as the ability to capture students' attention; lower students stress; and give students the chance for real communication. There are variety of board games, card games, word games, and puzzles that many children and adults play.

Many of these games come in both physical and electronic/digital formats. In recent years, a number of educators and educational researchers have come to realize that games can be an important component of both formal and informal education. This has become a legitimate area of study and research. There are lots of games that are now available in electronic format. Computer networks have made possible games that allow many thousands of players to be participating simultaneously. The computerized animation and interaction in these games bring a dimension to games [5].

Learning with board games

Games are useful, effective, and enjoyable for all ages. Board games provide many educational and teaching benefits and have proven their value when designed appropriately for learning. Proper designed team-based board games not only inspire learning, they encourage communication, collaboration and risk taking. They empower players by helping to build self-confidence. The different elements of game design support a wide range of player abilities, and learning translates to behavior changes [6].

In order to get a good result in creating the board game, it should be tested over an extended period of time. Important also that the result and process compared with different lecture styles. The game as an educational tool may be enhanced by the inclusion of other strategies, such as debriefing, skills activities, and more rigorous theory-based educational content. The simple board game format is useful and easily adapted not only for schools, but also for home, community, and other non-formal settings [7].

V. THE RISE OF BOARD GAME IN INDONESIA

In general, board game is a tabletop game that includes moving game component on pre-marked surface according a set of rules. Board game has been around since ancient times. The oldest board game known to man is called Senet, played in Predynastic Egypt around 3100 BC [8]. Ever since that period, Board game has been discovered throughout the world which includes titles like Mehen, Backgammon, Go, Shax, Mansion of Happiness, and one of the iconic board game, Monopoly, was known as The Landlord’s Game.

In Indonesia, Congklak, is an example of a traditional board game that still being produce and played in the various regions of Indonesia. Congklak is one of the game that survived for centuries and become part of Indonesian legacy. Ever since that period, there are various different type of board games emerges in Indonesia.

Supported by the Government’s Creative Division, current board game Industry shows a healthy growth across the country. On September 2017 alone, there are 53 Board Game Publisher recorded in Indonesia.

Various Café now adopting board game as a theme and becoming a place for player and board game designer to hangout and playtest the latest prototype. Almost every week there are a community gathering in several cities such as Jakarta, Salatiga, Bandung, Solo, and Surabaya.

VI. PROTOTYPING THE GAME

The first step to build the game, the researchers start making different type of prototypes to accommodate the process of batik making by experimenting various game mechanic. Each of this prototype needs to have a consistent mechanic which involves game rules and education purpose. According to Gregory Trefry from IGDA, Rules provide the skeletal framework for game. They give the game structures and solidity. [9]. Breaking down game mechanic is one way to get the framework needed for this particular prototype.

The linearity of batik making is one of the mechanic that the researcher cannot change. This becomes the core concept of the game as the researchers wants to understand the effectiveness of batik process through board game. The second mechanic is the use of tools for each process making each player to gather resources needed to progress. The third and last mechanic that needs to be in the game is competition. This particular mechanic is used to strategize each move and push the player to finish the game.
Once the idea and game structures is finished, the researcher then start sketching rough ideas on the board while implementing game mechanics. The process took just around 3 hours before moving to actual prototypes.

After enough brainstorming and conception using pen and paper, the researchers then implementing their ideas through board game prototype. Using paper, cards, dice and other materials to support the idea, the researcher then working on how the actual game plays by testing all the available mechanic.

The first prototype is focus on the linearity of batik process. Each player has a set of batik design that he/she needs to finish by progressing each process. Every process then needs a distinctive tool. The drawback for this prototype is that is too linear that it’s become a racing game. Even Though the researchers add different points on different batik design, the first player is most likely always wins the game due to the nature of this prototype.

In the second prototype, the researchers add branching path and additional randomizer in the form of weather dice. The prototype is getting more complex but still maintaining the mechanic. Linearity of batik process is still intact, each process still needs tool to advance, but now player can have a choice to use more tools to speed up the process. Some of the process now have 2 options: The Fast lane, or the normal lane. The weather dice is introduced during the drying process. Player must roll a dice to progress depending weather conditions (Sunny for 1 turn, cloudy for 2 turns, and if the player gets rain, he/she needs to wait for the other player to progress then roll again). This prototype aims to balance the “racing” mechanic found in the 1st prototype.

The researcher then creates a 3rd prototype focusing on the educational part. Adding information on each card and design, as well as introduce tool costs and points to gamify the Batik Process. Using buttons and additional “Store Board” for player to buy tools, each player now have an extra layer of thinking on how he/she will win the game. As the most profitable player, or the most productive batik maker.
After testing the game internally, on the 3rd prototype, the researchers then decide to start playtest the game. The board game was tested in 2 different cities (Jakarta and Bandung) to get different opinions and feedbacks based on the current state of the game. Before the test begin, each player was questioned whether he/she already knows in regards to batik and its process. Then once the game finished, the researchers then ask various batik process in detail to ensure that the game is educative enough and yet still entertaining to play. The playtest also checks if the current state of the game is easy to understand without any explanation from the designer.

The playtest conducted to 10 players from each city playing from 1 to 3 sessions per-respondent age 15 - 29. Each session plays around 35-45 min including explaining the game rules. The result concludes that 84% of the respondent manages to answers batik process questions 100% correctly after playing the game for 1 session. While younger tester seems to rush their game during playtest resulting in not knowing some of the correlations between each tool for the process, tester age 20 above seems to play safe by collecting most of the tools before each phase.

Most respondents feel the weather dice mechanic is interesting and explains the concept of drying batik efficiently, while lorod process is the least interesting/confusing due to lack of visual explanation. From the playtest, only half of the players understand the concept of more complex/detailed batik is valued more than a simple batik even though the researchers put higher point on the complex batik design.

The researchers conclude that this because of the player can gain more points if they rushed through the process selecting simple batik and grind their way faster than the more detailed batik. Another aspect of batik process that missed during the testing is the concept of timeline. The researchers put a block to visualize monthly progression, and 76% of the players think that it was a weekly progression because one of the block colored differently and stated that during that time, there’s no batik making progress and all player received money for further developing their batik design. This totally the opposite of how batik is made and the researchers need to explain it better.

Overall, the test results in understanding the batik process through game is far more interesting compared to traditional learning method. While the game is unfinished and still need some tweaking, the idea of simulating technical process through gamification shows a great potential of alternative teaching methodology.

VII. CONCLUSION

Using game as an alternative method of learning has been used in many discipline. Current research indicates that board game can be used as teaching material as well as self-education purposes. Understanding the tools and difference phases needed to produce batik while casually educate the player has been achieved in this research, even though the prototype still needs a lot of tweaking before the researchers can publish the game. By playing the prototype, players also introduced to Lasem as one of Indonesia’s heritage location. With the game, the researchers manages to teach the batik process by playing and preserving Indonesian culture especially Lasem.

REFERENCES