

## Cognitive Aspect of Dhakon Games in Painting Art Creation with Augmented Reality Technology

Arum Wilis Kartika Ayuningtari<sup>1)\*</sup>, Martinus Dwi Marianto<sup>2)</sup>

<sup>1)</sup> Post-Graduate, Indonesian Institute of The Arts Yogyakarta, Indonesia

<sup>2)</sup> Post-Graduate, Indonesian Institute of The Arts Yogyakarta, Indonesia

\*Corresponding Author

Email: [arumwilis7@gmail.com](mailto:arumwilis7@gmail.com)

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### ABSTRACT

*This art creation was born because of the author's anxiety about the lack of child-friendly nowadays games. Games on gadgets are mostly not very child-friendly and will have a negative impact on them, so there is a need for educational games such as traditional dhakon games. This creation aims to create a work of painting that comes from one of the hidden essences of dhakon games, which can hone the cognitive aspects of children. The painting art creation uses practice-based research method. The process of collecting data is obtained through observation, literature study, and interviews. The result of this creation is a two-dimensional painting that is representational, deformative, and has symbolic meaning with acrylic on canvas media combined with AR (augmented reality) technology through trans-media approach. This painting has the title "Gemi, Setiti, Ngastiti, Ngati-ati". This creation is useful as a medium of criticism and as a medium of education to the public about the essence of a game has a big role in the child's growth and development process, so parents must be selective in choosing children's games. In addition, this art creation is also an attempt to revitalize the dhakon game as a product of the past culture that is full of educational values but sadly has been abandoned by many people.*

### KEYWORDS

*Culture  
Traditional game  
Dhakon  
Painting  
Trans-media*

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### INTRODUCTION

The idea of creating this work of art departs from an observation of cases of child dependence on the use of gadgets in Indonesia, especially the environment where the author lives, Blitar, East Java. This problem is increasing due to the phenomenon of sociocultural dynamics due to the Co-19 pandemic. Apart from their attractiveness because they are sophisticated and innovative, gadgets and the internet contain many negative aspects that can affect the process of children's growth and development. In addition, there are still many parents who are ignorant of the selection of playing media. So, giving education and providing options regarding games that are child-friendly and educative are needed. The dhakon game was then chosen because it is unique, requires noble values of the nation, and philosophical. But sadly, the existence of dhakon games is slowly fading because they are no longer in demand. Based on this, the author wants to contribute to offering a solution, through reinterpreting the dhakon game by exploring the hidden essence of the game as educational material for the community. This research was also conducted as an effort to revitalize cultural products through visualizing the essence of dhakon today in the field of

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fine arts in the form of paintings combined with augmented reality technology.

Changes or sociocultural impacts on a large scale cannot be avoided by all ages, including children, after the phenomenon of the Covid-19 pandemic. Sociocultural impacts are all things that occur due to influences or collisions that can have a positive or negative impact on the socio-cultural environment and on the values of people's lives (Yanuarita & Haryati, 2021:62). The habit of limiting socialization with peers, limiting space for movement such as not leaving the house, to dependence on gadgets is a negative and sad thing that must be felt by children at that time. This sociocultural change certainly causes the emergence of new problems in society, especially among children. The problems that occur are also related to the responsibility of parents in monitoring all children's activities. Many parents "don't want to be bothered" about alternative media that their children can use. Even without strict parenting, these children have the potential to consume sensitive content such as racism, pornography, violence, etc. This phenomenon is very concerning because children have a tendency to "see and imitate", and cannot distinguish between what is good and what is bad.

Games can provide freedom for imagination, develop self-potential or talent, and creativity. Another theory regarding playing, namely Gross Theory (Monks, 2004:132-133) states that play must be seen as an exercise in very important functions in later adult life. There are various forms of traditional games in Indonesia that are unique, educative, environmentally friendly, and a form of Indonesian local wisdom, one of which is *congklak* or often called *dhakon* in East Java. The existence of this game introduces children to cultural values, ecological awareness, and social norms that are needed as a basis for character development. However, in reality the *dhakon* game, which requires positive values for children, has been largely forgotten by the current generation and the playing media has been replaced with materials that are not environmentally friendly. *Dhakon* as one of the traditional games has many advantages, but many people, including parents, do not know about these advantages, and people rarely remember how to play them and rarely tell their children about the traditional games they have played (Rohmatin, 2020: 146).

Whether we realize it or not, *dhakon* game gives positive values to children because it can sharpen their thinking power, dexterity, hone their counting skills (Andayani, 2020:3), be good at instilling kindness, love to save and I think strategically are the winning characters (Asteria, 2017:154). *Dhakon* contains various essences that children really need to hone cognitive aspects and the process of developing character in accordance with the noble values of Indonesian culture. Therefore, traditional games are cultural artifacts from the ancestral heritage that must be maintained and preserved because they contain local cultural wisdom values (Mulyani, 2016:47-48). Therefore, the *dhakon* game is one of the nation's "treasures" or cultural wealth that must be preserved. Because of that the topic of *dhakon* essences really needs to be raised as research subject to provide a new perspective for the community. Research on the reinterpretation of the *dhakon* was carried out to show the hidden values on it that are not recognized by society.

The essence of *dhakon* needs to be conveyed to society especially to children, teenage, and parents nowadays. Knowing this research has those target audiences, the artwork must be interesting, new, and present. Therefore, paintings must be packaged with a nowadays perspective, popular figures, and media. An effort that involves a creative process in it is also an effort to provide an option for solutions to problems that occur today. This is supported

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by Wisetrotomo's statement (2020:19) that the meaning of creativity is the ability to find or create new solutions. Also, according to Stein (1953) in Runco and Jaeger (2012:95) a standard definition of an artwork that can be defined as creative is a) creative work tends to be useful for people, b) a creative insight emerging from various existing knowledge or material and then after being processed it will produce new element, c) contains novelty from existing creative ways. Therefore, this research will be realized in the form of painting with a trans-media approach that will combine conventional painting with augmented reality technology.

This painting is created as a medium of communication, education, introspection or reflection for society. Those purposes are in line with Marianto's statement (2019:23) that art can be a medium for conveying messages or concepts to an audience, in a good and true sense or vice versa, simply to convince or persuade to gain a support campaign or as a propaganda medium. Art exists as a visual language as a means of communication to express the feelings and thoughts of the creator to other people whose impact can affect the emotions and penetrate the souls who enjoy it. That statement in line with the notion of art quoted from the Oxford Online Dictionary in Marianto (2019: 5) that art (n) is creative expression and human imagination, which is usually in the form of visuals, in order to create things that are appreciated for their beauty or for their power to evoke emotion. Art is seen as a bridge between creators of works of art and connoisseurs of art. These goals really need to be achieved because the child's play environment has a great influence on their personality-forming process, and also influences the physical, mental, and spiritual aspects which can be used as provisions for his growth and development.

## METHOD

The method used in the creation of this art is a practice-based research method. Research that uses this method is not only based on reading and observing activities, but authors are also required to do things back and forth, systematically and always be aware of what they are doing. Practice-based research is an original investigation carried out in an effort to obtain new knowledge where the knowledge is partly obtained through practical means and through the results of that practice in the form of artifacts such as images, music, designs, models, digital media, and others such as shows and exhibitions (Guntur, 2016: 29). This is in line with Husen Hendriyana's opinion of practice-based research (2021:9) that this method aims to gain new knowledge about the system, its characteristics, the nature of the practice, and how to improve it. In addition, the data is obtained through observation, document studies, literature studies, and interviews

The creative process from the experts is applied so that the creation can be carried out sequentially to make it more efficient. The creation theory used in this art creation process is from Laura Hill Chapman. This particular creative process was chosen because it is easy to understand and apply, and also easy to redevelop in the process of creating this work of art. From the beginning of the creation process until the completion, there are several steps that need to be carried out. According to L. H. Chapman (in Humar Sahman, 1993:119), the creative process takes place in three stages, those are (1) the inception of the idea, (2) elaboration and refinement, and (3) heention in a medium. A thinking framework or mind mapping is an attempt to describe the sequence used in the creation process which in the

process cannot be separated from references to various theories and method patterns. Here is a chart of the thinking framework that has been created:

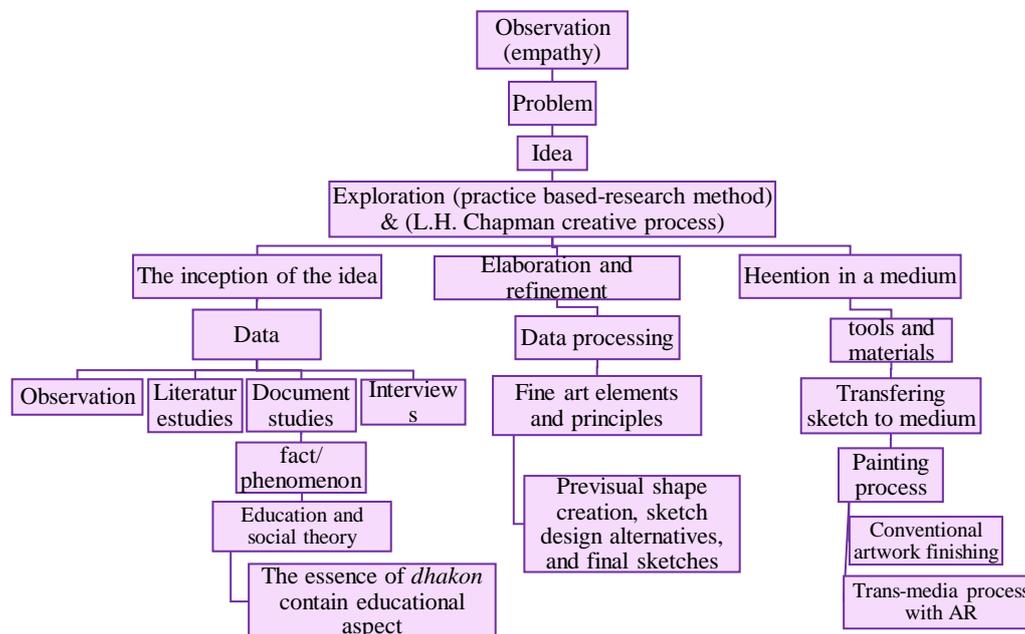


Figure 1. Thinking Framework

## RESULT AND DISCUSSION

### *The Inception of The Idea stage*

The first stage is an effort to find ideas or find sources of ideas. Sources of inspiration or ideas can be obtained from anywhere, such as the local environment or from news about actual phenomena that occur in the country. The author's anxiety about the future of Indonesian children is the reason for taking the dhakon game as the subject of this artistic research. Then the author doing observations and literature studies regarding today's sociocultural dynamics, especially in the environment where the author lives, Magersaren village, Blitar and made a correlation with the existence of dhakon games. A sampling of data or respondents is used to explore the memory about playing dhakon in that local environment. The data that the author is looking for is children's lore about dhakon game and the memory of the senior people when they played dhakon in the past. Apart from that, in the process of exploring the hidden essence of dhakon, the author also conducts historical, literacy studies and observes the visual form of the research subject by direct observation. This approach was carried out in three main research locations, those are Blitar, Yogyakarta and Surakarta (Solo) museums or libraries. In this stage, the author is doing the process of analysis, description, interpretation, and justification of concepts that have been designed to be further processed into visual forms that will be transformed into works of art.



**Figure 2.** Bring back dhakon playing media to the local community

### ***Elaboration and Refinement Stage***

In addition to developing and solidifying the initial idea in the refinement stage, this means developing it into a pre-visual concept which will later be possible to give a real shape or form. At this stage, the author creates various narratives from concepts that have been explored, through a process of critical thinking, and tested “in and through” in order to get a depth narrative that is full of emotion. Then after the pre-visual form has been completed, the author carries out a refinement process by taking “distance” which intends to reveal the lack of the artwork from the art connoisseur’s perspective or audience and not as the creator of the artwork, then make improvements.

#### ***1. Sketching Process***

The sketch design is made after the ideas have been processed into a visual concept. In sketching process, the author explores and make experiments with the visual forms that chosen as symbols or metaphors. This process is also an effort to study and then decide the proportion, composition, and expression. These various metaphorical objects and symbols are then composed into one sketch design panel. At this stage the author also considers various aspects such as the size of the final work and the position of the panel, i.e. portrait or landscape. Therefore, a portrait position with 90x120 cm size medium is choosen. Consideration of the final size of the artwork is needed so that the sketch to be made has the same comparison with the original size later. The sketches was made with an iPad gen 9 and Apple Pencil gen 1 electronic devices. The software or application used is Procreate.



**Figure 3.** The sketching process

When the draft sketch has been completed, the sketches are not transferred directly to the painting medium. However, the author carries out the refinement process of the draft sketch by taking a "distance" which is intended to reveal the lack of the artwork from the audience's perspective, not as the creator. This is the process of perfecting or finalizing the draft sketch towards the final sketch:



**Figure 4.** The sketch finalization process

## 2. *Designing The Color Concept*

After the final sketch was finished, the author did the color concept digitally on the tablet as well. This color design is intended to make the visual concept more completed, also to avoid mistakes in choosing colors which will waste material and time, and as a study of color composition and color harmonization. The colors used are pastel colors which give the impression of soft and happy atmosphere. This is the digital color concept that has been created:



**Figure 5.** The color concept

### *Heention in Medium Stage*

The last stage is the process of visualizing a final visual concept into a medium by utilizing certain media (tools and materials), styles, and various techniques. At this stage, the final visual concept will be transferred to a creative medium, canvas using painting techniques and acrylic paint. Then the results of the painting will be finished with satin varnish so that it makes the artwork look smooth and makes the color last longer. After the conventional artwork has been finished, the trans-media process will begin. The conventional artwork that in the form of acrylic on canvas media will be transformed into AR 3D animation using digital processes.

#### *1. Transferring Sketch into Painting Medium*

The final sketch is then transferred to a painting medium canvas. For time efficiency and accuracy of sketch proportions, the transfer process is assisted by electronic devices laptops and LCD. The final sketch file is sent to a laptop that connected to the LCD. Then the final sketch is projected according to the size of the canvas. After the projector's light is fit to medium, the sketch is transferred with tracing technique, which follows the pattern of the sketch projection from the LCD on the canvas. The sketching process on this canvas uses a pencil with B thickness code, a ruler, and an eraser.

## 2. Coloring Process

The first part to be colored is the main object. Then the background, and after that is the additional object. This artwork use acrylic paint and water for the solvent. The colors chosen are pastel colors with a value tint. After the base color or the first layer has dried, then entering the process of applying the second layer and make shade part of the object. This second layering is an effort that useful for adding volume or spatial impressions to painting objects, so they don't seem flat.



Figure 5. The coloring process

## 3. Pasting Gold Leaf Process

This process uses a paste and rub technique. The area or object (dhakon) to be pasted is smeared with special paint using a brush. After being given a layer of glue, the area is left for 3-5 minutes so that the glue adheres perfectly. After that the gold leaf sheets were taken and affixed to the surface that had been glued one by one slowly, this was done because of the nature of the gold leaf which was easily torn. After all the desired surfaces have been pasted over, the gold leaf that has been attached is gently swept using a fan brush or a wide flat brush. This is useful for cleaning the remaining gold leaf that doesn't stick.



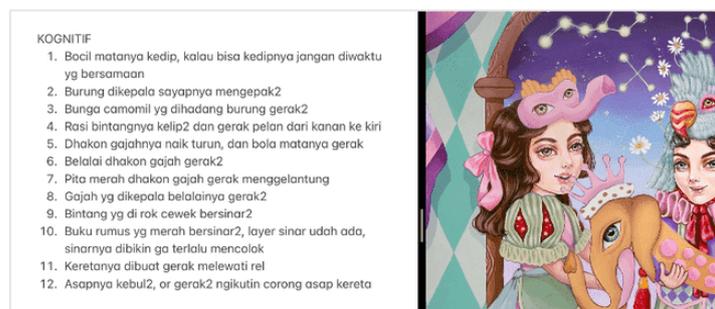
Figure 6. Pasting Gold Leaf Process

## 4. Finishing with Varnish

This varnishing process marks that the painting has been finished, and is ready to be displayed. Varnish is useful for protecting the surface of a painting from various damage that can harm the work, such as scratches or mildew. The varnish process in this creation uses Winsor & Newton Galeria satin varnish. Liquid varnish is dissolved with a little water, then rubbed slowly on the surface of the painting that you want to protect. After being coated with varnish, the work is left in a room with good air circulation, so that it dries quickly. The drying process is not carried out in direct sunlight to avoid damage to the work.

##### 5. *The process of transforming conventional works into AR (Augmented Reality)*

Before being transformed into a digital work, the author makes a list of the objects That will be cut and moved. This is necessary to conceptualize the motion and order of the layers. The concept of motion is made by paying attention to the essence, intent and purpose of the painting.



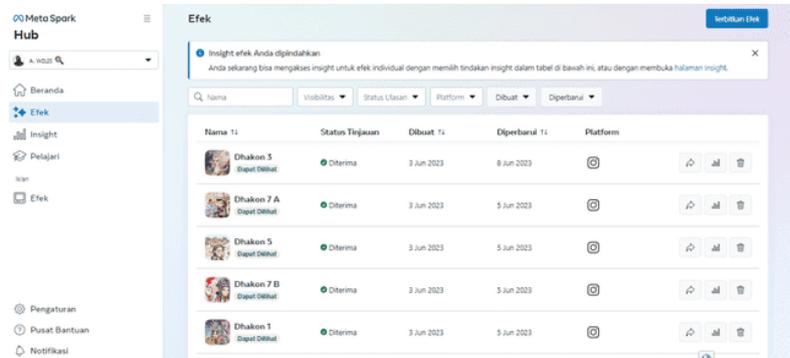
**Figure 7.** The concept of motion and the object that will be cut

Conventional work is digitalized using with an output jpeg format. After that, digital artifacts are processed using 4 digital stages, those are: cutting, layering, rigging and animation. First, digital photos are processed using the Procreate digital application to separate (cut) the object parts into several layers in PNG format.



**Figure 8.** The cutting process with the Procreate application

After all the PNG formats are ready, the layers are stacked in order and adjusted to the layout of objects or the position of conventional work objects with the Blender 3.3 application. After the layering stage is complete, it enters the rigging stage, in which each piece of object is given a “bone” as a framework which will be moved in the animation stage.



**Figure 10.** AR uploading process on the Sparkarhub page on Facebook

After successfully publishing, the filter will automatically appear on the author's Instagram profile. The filter link is then converted into a barcode which will become a medium that makes it easier for visitors to be able to access 3D animated AR filters through the Instagram platform. When a conventional painting is scanned using the Instagram filter, a pop-up will appear the 3D AR animation that was created earlier. The painting will appear more alive because the objects in it can move.



**Figure 11.** AR in the painting can be accessed via the Instagram filter

## The Result



**Figure 12.** Final Result “*Gemi, Setiti, Nastiti, Ngati-ati*”

Title : Gemi, Setiti, Nastiti, Ngati-ati  
Media : Acrylic on canvas  
Size : 90 x 120 cm (portrait)  
Year created : 2023

This painting has a theme which is one of the hidden essence of the dhakon game that is the cognitive aspect that is taught or honed in the dhakon game. The titles Gemi, Setiti, Nastiti, Ngati-ati were chosen because they have meanings that can represent these values those are: thrifty or efficient, conscientious or thorough, having careful consideration in every decision, and always being careful. Such attitudes are some of good learning that can be found in dhakon games. This relates to determining the strategy and calculating the opportunities for the steps that give the best results.

This artwork has three main objects, those are two children and one hybrid object. These two children were standing facing each other while holding a dhakon object that looked golden in color. The setting in this painting is like being in a room in a house that has a large gate that shows a night view because it looks dark and also because there are constellations at the top. The hybrid object is a combination of the shape of an elephant's head and its body which looks deformed to resemble a dhakon game board because it has holes as the hallmark of this game. Apart from the dhakon and elephant hybrid shapes, there are also other animal shapes located on the top of the children's object heads, the deformation of the head shape of an elephant and a parrot. Then there is also another additional object that looks like a locomotive at the foot of the child object that is running on the rails which contains the dhakon board arrangement, and at the other leg there is a book with the probability formula on the cover. The colors presented are bright pastel colors and a little dark in the sky and this painting has a central balance that focuses on the middle.

The cognitive aspect of the author describes the presence of two main objects that are face to face by holding the dhakon object, placing the object in such a way as to represent two children facing each other in the dhakon game. Then mind-teaching activities that involve various abilities such as memorizing and determining strategies are symbolized by the shape of the heads of elephants and parrots that are above the heads of children's objects. These animals were chosen as symbols because they have high memory and have a better level of intelligence than other animals. One of the main objects is the hybrid form of an elephant head and a dhakon that wearing a crown inspired by the character of Ganesha, where the figure is a symbol of the god of knowledge. The dhakon roles as a strategic thinking agent is also symbolized by the visualization of constellations in the background including the constellations of the major ursa (biduk), scorpio, and crux. Constellations are specifically used by the ancestors (sailors) to determine the strategy of sailing directions. The train object at the child's feet passing through the dhakon rail symbolizes a journey or progress when the child plays the dhakon game.

This painting is made with bright pastel colors as a symbol of children doing fun activities while emphasizing a happy atmosphere, but not just having fun, here children are depicted as being able to achieve something more like strategic thinking, memory skills, and counting. The ability to count and look for opportunities to win is also symbolized by the existence of a chance formula book on the left foot of the child object, where every step is always calculated and not reckless in strategizing.

This artwork aims to inform that the traditional game of dhakon is not used as a tools for fun only, but in it is also taught the great abilities that children really need as a trigger for the development of their brain or thinking power. The ability to count, remember, think strategically is a basic skill that is needed by children today to adulthood. Because these abilities are basic skills to carry out various activities in life. The advanced level is looking for opportunities in cornered conditions, or looking for opportunities to gain an advantage in the next step, these two things are of course very profitable if these skills are successfully mastered.

## CONCLUSIONS

This artistic research found that the traditional game dhakon is not only an ancient playing medium or only serves as a tool just for fun, but is much more than that. The author reinterprets the dhakon game as an effort to revitalize or conserve Indonesia's cultural wealth. In the process of deepening the subject, the author finds that traditional dhakon games have various values or hidden essences in them that can spur the process of children's growth and development to be better. One of the essences is dhakon games can improve cognitive abilities. In author's perspective, the values contained in the dhakon game can prevent various problems faced by children nowadays.

The above ideas are then transformed into a painting combined with AR technology through a trans-media approach. This approach allows the writer to go beyond the boundaries of conventional painting creation in general or get out of the habitual boundaries of work. Imaginary things such as moving images can be realized in this work. The author feels a more dynamic sensation in his work because the objects in the work are no longer contained within the frame, but it can move freely outside the frame. The aspect of the purpose and

intent of choosing AR technology apart from being a medium beyond conventional boundaries, it is to support the essence of the artwork. The motions produced by AR can further complement the content of the story and seem to give more life to the artwork, such as the movement of sand on an hour glass object, the flapping bird, the emergence of mother earth from the ground, and so on.

These works are intended as media for promotion, reintroduction, and education to audiences, especially children or the younger generation, and parents about the hidden advantages of dhakon games. Author hope that the audience will be interested in, at least knowing the existence of dhakon, to the level of being interested to playing and applying the good learning or value inside the dhakon game.

## REFERENCES

- Andayani, Revina J, (2020). Efektivitas Media Pembelajaran Dakon dalam Meningkatkan Keterampilan Berbicara Mahasiswa BIPA. *Jurnal Bapala*. Vol. 7(3), 1-11.
- Asteria, Prima Vidya. (2017). Pengenalan Permainan Tradisional Indonesia di Kelas BIPA. *Jurnal Paramasastra*. Vol 4(1). pp. 146-159.
- Guntur. (2016). *Metode Penelitian Artistik*. Surakarta: ISI Press.
- Hendriyana, Husen. (2022). *Metodologi Penelitian Penciptaan Karya*. Bandung: Sunan Ambu Press.
- Marianto, M. Dwi. (2019). *Seni dan Daya Hidup dalam Perspektif Quantum*. Yogyakarta: Scritto Books Publisher dan BP ISI Yogyakarta.
- Mönks, F. J., A. M. P. Knoers, dan Siti Rahayu Haditono. (2004). *Psikologi Perkembangan: Pengantar dalam Berbagai Bagiannya*. Yogyakarta: Gadjah Mada University Press.
- Mulyani. (2016). *Super Asyik Permainan Tradisional Anak Indonesia*. Yogyakarta: Diva Press.
- Rohmatin, Titik. (2020). Etnomatematika Permainan Tradisional Congklak sebagai Teknik Belajar Matematika. *KID: Prosiding Konferensi Ilmiah Dasar*. Vol. 2. pp. 144-150
- Runco, Mark A. & Jaeger, Garrett J. (2012). The Standard Definition of Creativity. *Creativity Research Journal*. Vol. 24(1). pp. 92-96.
- Sahman, Humar. (1993). *Mengenal Dunia Seni Rupa, Tentang Seni, Karya Seni, Aktivitas Kreatif, Apresiasi, Kritik dan Estetika*. Semarang: IKIP Semarang Press.
- Wisetrotomo, Suwarno. (2020). *OMBAK PERUBAHAN: Problem Sekitar Fungsi Seni dan Kritik Kebudayaan*. Yogyakarta: Penerbit Nyala.
- Yanuarita, Heylen A. & Haryati, Sri. (2021). Pengaruh Covid-19 Terhadap Kondisi Sosial Budaya di Kota Malang dan Konsep Strategis dalam Penanganannya. *Jurnal Ilmiah Widya Sosiopolitika*. Vol. 2(2). pp. 58-71.