Quatervois: A Visual Representation of the Impact of Improper Face Mask Disposal in the Environment Through Trapunto Painting Using Non-reusable Face Masks

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Abstract

According to research, the increasing production of non-reusable face masks affected the environment as water and land pollution due to improper disposal. My study aims to educate the residents of Victoria Homes Subdivision, Tunasan, Muntinlupa City about the impact of improper disposal of non-reusable face masks amidst COVID-19 pandemic through exploring Trapunto painting technique by utilizing unused non-reusable face masks as a canvas with plastic bubble wrap and plastic bag between the two-layered canvases. I first conducted two preliminary surveys to gather data on the number of face masks used by my target audience in a span of one month to know their emotions about the impact of improper face mask disposal in the environment and translated it into colors that was eventually used for the creation of the output of my study. In line with this, I gathered quantitative and qualitative data from my target audience after they saw the output of my study. Based on my post-survey, it showed that the output of my study was able to increase the awareness of the residents of Victoria Homes about the impact of improper face mask disposal in the environment amidst COVID- 19 pandemic.

Keywords: non-reusable face masks, visual representation, Trapunto painting, improper disposal, COVID-19 virus, pollution

Introduction

To prevent the spread of COVID-19 disease, health workers and ordinary citizens use face masks, face shields and other protective gears on a day-to-day basis. Thus, there has been an increase in demand for the production of non-reusable face masks and other health protective gears during COVID-19 pandemic. It does not only affect human health, but it also affects every country's economy as well as its environment (Kajanan et al., 2021). Although the full personal protective equipment (PPE) is only required for health workers, especially those who are treating patients with COVID-19 disease, ordinary citizens use face masks to protect themselves from COVID-19 virus since it can easily be transmitted through coughing and sneezing. In connection to this, there has been an increase in demand for the use of non-reusable face masks. Therefore, it also contributed to the increase in medical wastes that affected the environment as water and land pollution when it was not properly disposed.

The common surgical non-reusable face masks that can easily be bought are created using non-woven fabric that helps filter bacteria and air. The usual material used is polypropylene that has 20 or 25 grams per square meter (gsm). Non-reusable face masks can also be produced using polystyrene, polycarbonate, polyethylene, and polyester (Henneberry, 2021). These are also the main components commonly used for the production of plastic bottles, plastic cups, plastic packaging, etc. In line with this, a non-reusable face mask that has a plastic component as a material is also a source of microplastic fibers. Those fibers could break down into smaller particles that can create microplastics and could affect the environment, especially if many were not disposed of correctly (Fadare O. & Okoffo E., 2020).

According to studies, the estimated number of non-reusable face masks that people use globally that are mostly made of plastic microfibers is roughly 129 billion face masks per month and 3 million face masks per minute (University of Denmark, 2021). On a local scale, the Philippines produces 25 million face masks per month (Crismundo K., 2020). In line with the fast-growing mass production of non-reusable face masks, Greenpeace stated that Metro Manila produces additional 280 metric tons of infectious waste a day, summing up to 16, 800 tons in 60 days (Villanueva R., 2020). In Rappler's interview with Ramon San Pascual, the Executive Director of Healthcare Without Harm Southeast Asia, he estimates that if every Filipino wears a non-reusable face mask daily, the total will be 100 million a day and 3 billion non-reusable face masks in a span of one month (Gozum I., 2021).

The impact of non-reusable face masks within the environment can easily be seen nowadays. I witnessed its environmental effects within our local community as well. According to Ketchel M. (2021), during a beach cleanup that happened in Hong Kong, volunteers gathered 70 non-reusable face masks along 100 meters of shoreline. An additional 30 non-reusable face masks were seen the week later. It has also been reported that non-reusable face masks can be seen floating in the Mediterranean Sea. Most mass-produced non-reusable face masks that were manufactured were made of plastic materials that, when improperly disposed of, can last for decades to hundreds of years in the natural environment. The microplastic that it produces once the non-reusable face mask breaks down into smaller pieces can eventually be eaten by different

animals (Ketchel M., 2021). Since some improperly disposed non-reusable face masks do not easily break down, once washed into bodies of water, it could choke or entangle marine animals. In addition, according to a statement from Dr. Geraint Sullivan, the amount of non-reusable face masks that were produced was also bio accumulative and will eventually accumulate in the environment which cannot be removed in aquatic systems and will only pile up over time (BBC,2021).

For my study, I solely focused on creating a visual representation of the impact of improper disposal of non-reusable face masks in the environment by creating two Trapunto paintings using unused non-reusable face masks and found plastic objects that can be seen within my household as my main material. Moreover, I used the theory of Semiotics and Structuralism to further discuss the process of creating and designing my Trapunto paintings.

The increase in the number of improperly disposed non-reusable face masks during COVID-19 pandemic might lead to a larger environmental crisis soon. Furthermore, it could end up polluting different bodies of water and land. According to BBC Asia, Personal Protective Equipment (PPE), mostly non-reusable face masks were being littered everywhere and some were washed up on coral reefs and other marine areas that are close to Metro Manila. Additionally, it was said by Asian Development Bank (ADB) that during the surge of COVID-19 pandemic, Metro Manila could have been producing 280 tons of additional medical waste daily (BBC, 2021). Moreover, according to Manila Bulletin, a study says that although only one percent of non-reusable face masks were disposed of incorrectly, it would result in 10 million face masks per month littered in the environment (Chua J., 2021). This could be scattered on landfills, roads, and different bodies of water. My main goal is to provide awareness to the residents of Victoria Homes Subdivision by showing them the visual representation of the impact of improper disposal of non-reusable face masks through my Trapunto paintings and their insights were gathered after seeing the output. This study will answer the following questions:

How does the exploration of the Trapunto paintings using non-reusable face masks help increase the awareness of the residents of Victoria Homes Subdivision about the impact of the improper disposal of non-reusable face masks in the environment?; What are the insights of the residents of Victoria Homes Subdivision about the Trapunto paintings using non-reusable face masks and found plastic objects as a visual representation of the impact of improper disposal of non-reusable face masks? Will the Trapunto paintings, as a visual representation, help communicate the problem to the target audience?

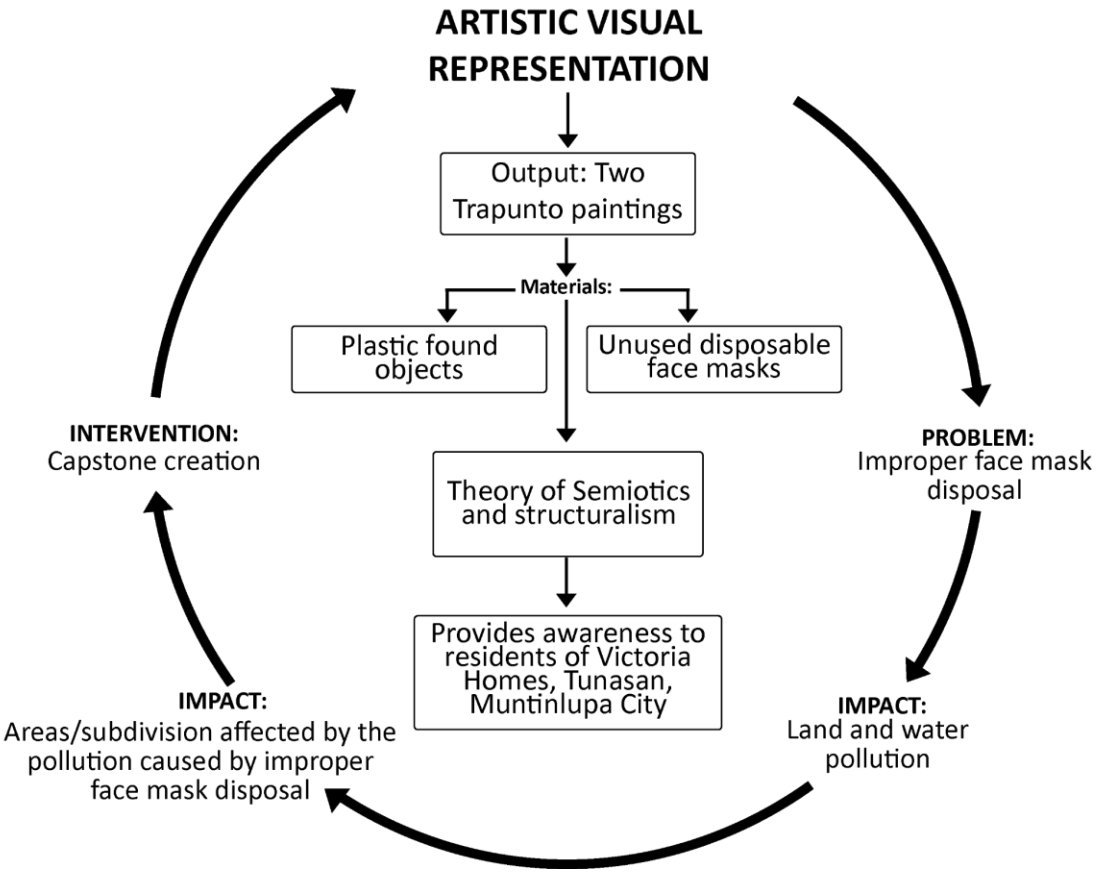
To answer the stated questions for this study, I created two Trapunto paintings by using unused non-reusable face masks and found plastic objects as a visual representation of the impact of the improper disposal of non-reusable face masks in the environment, mainly on land and bodies of water. Furthermore, the goal of my research is to raise awareness among the residents of Victoria Homes Subdivision about the impact of the improper disposal of non-reusable face masks to the environment; I also wanted to educate the target audience more about the effects of improper face mask disposal by uploading the photos of the output and its information into a website or virtual exhibit as part of my collateral for my study's main output. My main goal and objective for

this study is to create two Trapunto paintings and explore its process by using different materials such as non-reusable face masks and found plastic objects. My second goal is to identify the insights of the residents of Victoria Homes Subdivision on the Trapunto paintings after seeing its photos and exhibit. Lastly, I want to provide a visual representation through the Trapunto paintings that connects the problem to my design and materials that I used for the output of my study by using the theory of Semiotics and Structuralism, because face masks are vital for our daily protection during this pandemic and its improper disposal can greatly affect the environment through land and water pollution, it can also cause air pollution through the improper way of burning the face masks.

Creative Framework

Figure 1

Framework of the Visual Representation of the Impact of Improper Face Mask Disposal to the Environment



The creative framework that I used visualizes the process of how I came up with the output of providing a visual representation about the impact of improper face mask disposal to the environment. In this section, I created an overall visual summary of the details on how my multimedia project was made. The creative framework and the following words that are part of it are discussed based on the context of this study.

For the method and process of my study as well as my output, I started with the goal of filling the gap of the problem that I have observed prior to the creation of my study which is the increasing number of improperly disposed face masks on Victoria Homes, Tunasan, Muntinlupa City and its impact to the environment. I began by acknowledging the problem and its impact which leads to land and water pollution. The pollution is the outcome of directly throwing the used face masks to the natural environment and eventually producing microplastic that the face masks have created. This also affects the species that are living within the affected location, primarily parts of Victoria Homes Subdivision. As a proponent, I have provided an intervention, which is taking an action by creating this study, to help improve the situation by giving awareness to the residents of Victoria Homes Subdivision.

By providing an intervention, I planned and created a visual representation of the impact of improper face mask disposal through my two Trapunto paintings by connecting its materials, motif, and color to the problem with the help of Theory of Semiotics and Structuralism as its main foundation. I used the Theory of Semiotics in order to process the meaning of the objects, images, and colors, and materials used that can be seen within the painting or was used to create the painting. The signs within the Trapunto painting were further explained with the help of the first order of signification, denotation and the second order of signification, connotation. Moreover, according to Curtin (2009), semiotics is mainly concerned with meaning and how representation using language, text, objects, and images produces meaning. In analysis of semiotics, it acknowledges the different relationships the people have with representation. Thus, images, objects, and colors are being seen and understood by the audience as dynamic that serves as a representation and can be interpreted. Furthermore, understanding images is not a one-way process where the audience sees the image or object. It is also related to elements such as culture and society. In addition, it is said that the audience can gather information about the signified (mental concept) upon looking at the sign. The society was taught to link the symbolic sign to its signified. Thus, images and objects are best recognized as dynamic. Additionally, the article discussed how Rolland Bathes stated that the immediate visual impact is a denotation which is the first-order or the basic meaning of the image or object. Whereas the second order is the connotation that is based on the cultural meaning of the image or object. The context of a visual representation in this study is discussed as an illustration depicting the impact of improper face mask disposal by putting it into a visible form which was interpreted through the Trapunto paintings that uses symbolisms to create connotation for the materials used, images that can be seen in the painting, and colors that can be seen on the overall output. This allows me to create a visual representation (Trapunto paintings) that allows my target audience to directly see the

first order and understand the second-order of the visual representation by relating it to the culture or environment that they are in. This helps my target audience to connect with the Trapunto paintings by adding elements on the recollection or memory of how the location looked like.

According to Mambrol N. (2016), structuralism is how people see the world in structures. Things cannot be known when it is separated, it must be seen within the context of a bigger structure that it is part of. Thus, I created a sign which has a context that can be understood by the target audience by relating it to the culture that they are in. The basic understanding of the culture of my target audience and the location that they are in, allowed me to see the intersubjective thinking and responses that we both shared. In relation to an article written by Chandler (n.d.), I used this to connect it to the output of my study for the target audience to relate and see the denotative and connotative meaning of the Trapunto paintings without risking having any individual to have a limited range of understanding the Trapunto paintings' connotation.

Upon applying the Theory of Semiotics and Structuralism, I used the same technique but with different process and new materials, the output of my study contributes to the art industry, mainly Studio Arts since it can inspire other artists to explore Trapunto painting by using their own materials that are related to their subject matter in order to provide their own visual representation and connect the significance of using Trapunto painting as a multimedia project to help raise their advocacies and increase awareness as they tackle their chosen subject matter.

For my research design, I first conducted a quantitative and qualitative preliminary survey to one hundred (100) respondents, before the creation of the output of this study.My first preliminary survey gathered the data on the number of non-reusable face masks used by my target audience in one month. I utilized Google Forms to disseminate the survey questionnaire. The result of the preliminary survey was tallied and served as the representation and main basis of the size of the Trapunto paintings. Based on the tallied number, one (1) face mask that was sewn to create the canvas represents or is equal to six (6) face masks that the respondent used in a span of one month. I also conducted a second preliminary survey which is a mixed survey that allowed me to know the views, opinions, and emotions of the residents of Victoria Homes about the impact of improper face mask disposal which I translated and incorporated on my Trapunto paintings. After the creation of the output of my study, I conducted a post-survey questionnaire through quantitative and qualitative methods and analyzed the answers of respondents and assessed their insights about the output of my study. The data that was gathered showed that the Trapunto paintings as a visual representation of the impact of improper face mask disposal on the environment helped communicate the problem to my target audience. Furthermore, the gathered data was analyzed and served as a basis and stated that plastic found objects and non-reusable face masks are effective as a material that resulted for my Trapunto paintings to have a clear statement and was able to effectively provide awareness to my target audience.

The research materials that were used as a basis for the post-survey of my study are from online articles and studies that are related to data visualization, visual representation, and aesthetics in line with Cawthon and Moere's study based on the research of Sara Salloum (2019) and were inputted on a series of questions to gather information from the respondents. The questionnaire helped answer my study's statement of the problem. I analyzed it using Thematic Analysis and Qualitative Content Analysis and some questions used Likert scale. I assessed the output of my study and showed that it raised the awareness of my target audience about the impact of improper face mask disposal to the environment as a visual representation through Trapunto painting.

My target audience, the residents of Victoria Homes Subdivision, Tunasan, Muntinlupa City, are also the respondents who answered all the surveys that were conducted by this research. The age range of the respondents who answered the preliminary survey and post-survey is 15-65 years old, and most are capable but not limited to going outside their house who prefers to use and are more inclined to buy and use non-reusable face masks as their main protection against the COVID-19 virus during the pandemic.

The results from the data that were gathered using the Likert scale and qualitative questions from the survey questionnaires were critically assessed and explained through Qualitative content analysis. I also used Thematic analysis to assess the wide range of answers given by the respondents. The result determined whether the Trapunto painting, as a visual representation, has raised the awareness of the residents of Victoria Homes Subdivision, and the aspect of the output helped raise the target audience's awareness.

For my design process, I created two (2) Trapunto paintings and used acrylic paint that has plastic objects found stuffed between the two-layered non-reusable face masks canvases. The size of the painting depended on the data gathered from my first preliminary survey through the number of face masks used by my respondents in one month. One (1) face mask that was stitched on the canvas represents six (6) non-reusable face masks based on the sum of the number of face masks used by the respondents. Furthermore, the two paintings are a visual representation of the impact of improper face mask disposal to the environment through post-impressionism and also present its possible outcome if the attitude of the people towards the problem did not change through abstract expressionism. All the plastic objects found that was used for the output of the study are from my household, it is mainly composed of plastic bubble wrap and plastic bags and was hanged on the ceiling and was exhibited through an online website or platform due to the non-constant government restrictions during the COVID-19 pandemic and to lessen the risk of spreading the virus due to crowd gatherings. I inputted it into a 3-Dimensional (3D) environment where my target audience could virtually explore the details of the output, its information, and other photos that are within the virtual exhibit, although due to the lessened restrictions in June 2022, I was able to have a physical exhibit as well.

My first Trapunto painting is entitled *"Turning point."* I used an impressionist approach to symbolize that the scenery that was painted came from the fragments of my memory and impression to the actual moment when I witnessed the scene. Thus, it captured the moment in which I witnessed the starting point of the first months of the COVID-19 pandemic and how it also started to affect the environment through improper face mask disposal. To achieve the result for the said Trapunto painting, I used bristle brushes with different sizes to achieve bold strokes and depict the movement and the overall shapes of the plants and the other images within the painting. To emphasize the essential images or strokes within the painting, I also utilized the technique used for creating a Trapunto painting in which the two canvases were stuffed between with plastic bags and bubble wrap to achieve its three-dimensionality. My second Trapunto painting is entitled *"If we don't stop."* My approach for the said Trapunto painting is abstract expressionism. It allowed me to freely convey the idea of the impact of improper face mask disposal in a non-representational way. It was a combination of prediction and imagination of how the impact of improper face mask disposal will affect the environment soon. To express the feelings and ideas within the Trapunto painting, I utilized how colors were chosen, how the strokes were made, and also relates the importance of the process of how the painting was created. I used earth-related colors that symbolize the environment that utilize different shades, tones, and tints to portray that the pollution created by improper face mask disposal is too late to be removed from the natural environment. Furthermore, I also dominantly used the shades of blue and different shades of red to convey the emotion within the abstract painting. In addition, instead of using bristle brushes to create bold strokes, I took advantage of using face masks and dipped it with the chosen colors as a substitute for a brush. Thus, it symbolizes how the mask imprinted its impact on the environment through time. Lastly, I utilized the technique that is being used for creating a Trapunto painting that I also used on the first Trapunto painting where the two canvases are stuffed with plastic bags and bubble wraps between one another. It created added depth and texture on the painting that also enhances the sense of space and touch of my target audience.

Pre-Production Stage

For the pre-production stage, I focused mainly on planning the process of the Trapunto paintings, creating a Gantt chart to make sure that the needed deadlines are met, and the output will be finished on time. This is where I started to budget the expenses that are needed for the pre-production, production, and post-production stage. After the budget planning, the preliminary survey was disseminated. This determined the number of non-reusable face masks that are needed to be bought for the canvas of the Trapunto painting. In addition, I disseminated my second preliminary survey that allowed me to know the emotions and insights of my target audience about the said problem. Lastly, the pre-production stage is where 70% of the needed materials were ordered or bought.

Production Stage

My production stage is mainly about creating final sketches of the chosen design and later creating the Trapunto paintings. This is where I started to plan and sew the two-layered canvases. After the two-layered canvases were created, I began to draw the design of the painting on the surface of the canvas. Then, the Trapunto process began by stuffing and stitching the plastic

bubble wrap between the two non-reusable face mask canvases. This allows the painting to achieve its three-dimensional (3D) effect. After the stuffing and stitching, the priming of the canvas started. I coated the canvas with white acrylic paint. After the coating process, the canvases were ready to be blocked with the chosen colors and were painted using the chosen technique. The last part of the process is when I sewed the parts of the canvas to enhance and emphasize the elements or images that can be seen within the paintings.

Post-production Stage

The post-production stage is where I tweaked the small details that need to be enhanced from the Trapunto paintings. This stage is where I sewed the ends of the canvas and cut overlapping threads that can vividly be seen. It is mainly about editing and enhancing the overall visuals of the Trapunto painting. This is where I also framed the Trapunto paintings with a wood frame to support the Trapunto paintings while being hanged during the physical exhibit.

Review of Related Literature

In relation to my Trapunto paintings, this part discusses related literature that further tackles face mask pollution, its handling practices, and its impact on the environment. This enables me to strengthen the purpose of my output. Furthermore, it also discusses how art can be a tool to provide environmental awareness. Lastly, this section also discusses Trapunto painting and its process that has the purpose of tackling the exploration of the technique of the Trapunto painting that has a relevance to my study's objectives and methodology.

Face Mask Pollution in the Philippines

During the surge of COVID-19 pandemic, from 2020 to 2021, there has been an increase in demand for personal protective equipment (PPE) such as face masks, face shields, PPE suits, and surgical gloves in the Philippines. Filipinos that do not work in the hospital mostly use non-reusable face masks as their first line of defense against the COVID-19 virus. In line with this, according to a Baron G. (2020), there has been a survey from the Institute of Global Health Innovation and YouGov that 91% of the population of Filipinos who go out of their house use face masks. In addition, according to the statistics from a research study, on a global scale, the Philippines was ranked as the 17th country when it comes to the estimated daily usage of face masks and global plastic waste generation. (Benson et al., 2021). In relation to this, the goal of this study was to raise the awareness of the residents of Victoria Homes Subdivision, Tunasan, Muntinlupa City about the impact of improper face mask disposal in the Philippines, mainly within their local environment and community which I am also part of, through photograph documentation and producing a visual representation of the number of face masks used by the residents in a span of one month.

Handling Medical-grade Face Masks

According to a research article by Schimelpfening (2020), Debra Goff, a unit chair in Biochemical Engineering, a professor, and the director of Center of Biomanufacturing for Regenerative Medicine stated that non-reusable face masks like surgical face mask and N95 are solely produced for single use only. Should there be a chance that it will be reused within the professional setting, proper disinfection must be administered. For instance, the N95 face masks can be sanitized using the germicidal irradiation or vapor phase hydrogen peroxide. In line with this, in a research conducted by Alcaraz et al. (2022), mentioned that the reuse of medical or surgical face masks is possible after washing steps or cycles, decontaminating treatments, autoclaving cycles, cold sterilizations such as radiations and EO treatment was a success. The study suggests a clinical trial within real setup or conditions in accordance with the required medical face mask standard in Europe needs to be first conducted to modify laws and regulations for single use face masks. Moreover, according to the said study, the application of using detergents and disinfectant while in the process of the washing cycle helps reduce the existence of germs, although based on the first intent to produce non-reusable face masks, it is said that non-reusable face masks are not specifically designed to be reused and must be discarded after use with the absence of a medical professional who has access to scientific equipment that can properly disinfect non-reusable face masks. In line with this, I did not have proper equipment to administer such a process and I am not a medical professional who can do thorough research before proceeding the sterilization process to reuse used non-reusable face masks for this study. Thus, due to lack of proper equipment and guidance of a medical professional as well as the absence of the results of the suggested clinic trial, for the sole purpose of providing a visual representation of the number of face masks used by the respondents and the impact of improper face mask disposal in the environment, I utilized unused non-reusable face masks for the output of this study with an option of putting the output of this study to the process of waste valorization, should it be completely disfigured or destroyed due to unforeseen circumstances.

Impact of Improper Face Mask Disposal to the Environment

The increase in use of non-reusable face masks has greatly affected the environment once disposed improperly by directly throwing it in bodies of water, streets, roads, grassland, etc. According to a news article, there has been an immediate increase in plastic waste in the Philippines due to COVID-19. It has contributed to the improperly disposed trash that can be seen in the ocean that highly affects marine biodiversity (Sarao Z., 2021). Moreover, according to a research study “Post COVID-19 Pandemic: Bio Fragmentation and Soil Ecotoxicological Effects of Microplastics Derived from Face Masks'' improper face mask disposal has been an alarming problem in the environment due to the materials used to create these masks. Such materials include polypropylene, which is also the main material that was being used to produce plastic bags, plastic cups, and bottles. It is necessary to know that non-reusable face masks are composed of polypropylene that can produce microplastics once it breaks down in a natural environment setting. The study used a controlled and exposed group to estimate the soil ecotoxicological effects of melt blown (MB) filter fibers and fragments and predict the impact of microplastics to the environment that comes from face masks beyond the COVID-19 pandemic.

The MB filter includes the spinning of the polypropylene into a dense nonwoven fabric to create non-reusable face masks. Statistical analysis was conducted to see the adverse effects of MB filters to the environment. It investigated the probability of plastic nanofiber generation due to bio fragmentation, the process in which the plastic slowly breaks down into smaller pieces where its polymers disintegrate in water soluble monomers and oligomers. The study used statistical analysis focused on MB filters that are used as key materials for face masks. The study reveals that when the soil species get to ingest the polypropylene microplastics along with other pollutants, it becomes an avenue to provide negative health impacts (Kwak & An, 2021). The use of face masks is unavoidable due to COVID-19 pandemic, just as the face mask waste production is. Thus, the study suggests proper use and disposal of face masks to protect human health and ecosystem's balance during and after COVID-19 pandemic (Kwak & An, 2021). In line with this, the output of this study does not aim to conduct a similar research. Instead, my goal, as a proponent, is to provide awareness to residents of Victoria Homes Subdivision, Tunasan, Muntinlupa City by creating a visual representation (Trapunto paintings) of the impact of improper face mask disposal in the environment that was discussed by the cited study above for them to know the importance of proper disposal of face masks to maintain the balance of the ecosystem they live in.

Proper Face Mask Disposal

The proper disposal of face masks during the surge of COVID-19 pandemic is vital to lessen the impact of improper face mask disposal within the environment and maintain the balance of the ecosystem as well as to prevent the spread of diseases. According to a study entitled "Face Mask and Medical Waste Disposal During the Novel COVID-19 Pandemic in Asia" (2020). In the study, the data was gathered by getting the population of every country in Asia. To estimate the daily face mask usage of the population in Asia, the research adapted an equation form Nzediegyu and Chang where the daily face mask use (pieces) is equal to the population (number of persons) multiplied to urban population (percentage) and multiplied to face masks acceptance rate minus 80% times the assumption that each person in the population uses face mask every day. The result of the study showed that the number of face masks used in 49 countries in Asia on July 31, 2020 has a total of 2,228,170,832. In line with this, the Philippines is one of the countries that mostly use face masks with a total of 48,967,769 face masks daily. In addition, according to the study, Asian countries have several recommended ways on how to dispose a used face mask and other plastic medical waste properly. In a household setting in Thailand, it is suggested that residents put their used face masks inside zip locks or plastic bags before disposing the face masks in red bins for waste collection vehicles. In Wuhan, China, used face masks are collected through special trash bins. If the trash bins are unavailable within the area, residents are recommended to wrap the used face mask into a plastic bag before disposal to prevent air exposure. The study suggests that it is compulsory to plan the waste management and consider the separation of face masks as well as its storage and collection for its recycling and disposal to lessen the plastic waste in the environment (Sangkham S., 2020). In line with this, my output for this study advocates the proper face mask disposal by providing awareness to the target audience by creating a visual representation of the impact of improper face mask disposal to the environment.

In connection to improper face mask disposal due to the amount of face masks used by a population daily, there are studies that reviewed the valorization options for proper disposal of used face masks during COVID-19 pandemic. Waste valorization is not new to the system that helps reduce plastic waste pollution in the environment. It is the procedure where waste materials are being transformed into other useful products such as chemicals, fuels, building materials, etc. (Arancon et al., 2013). The waste valorization during COVID-19 pandemic helps lessen the impact of improper face mask disposal in the environment while repurposing it into new products instead of producing microplastics in land and bodies of water that affects marine animals and other species. In a study conducted by Asim, Badiei, and Sopian (2021) entitled "Review of the Valorization Options for the Proper Disposal of Face Masks During the COVID-19 Pandemic," the study aims to investigate the different available valorization techniques or methods for discarded non-reusable face masks, to provide added knowledge to a country's way to valorize face masks and improve environmental awareness. The study shows different types of valorization options that a country could use for the proper disposal of face masks during the COVID-19 pandemic. The following options that were stated are as follows: pyrolysis (biofuel production), carbonization, chemical valorization, thermomechanical valorization, filters, building materials, and thickening agents. During the review of the following materials, although there have been ways of utilizing and burning face masks as a method to lessen the amount of discarded face masks, it is not always advisable in other countries because it also releases toxic chemicals. Hence, the study offered a different way and perspective in handling plastic issues, mainly on face mask pollution amidst COVID-19 pandemic. The study used a diagram for the proposed procedure of discarded face masks and PPE in a post-COVID-19 scenario. It comprises of collecting the discarded face masks that produces micro-plastics and nanoplastics that could spread diseases; it also involves the process of physical and chemical valorization during its storage of 10 days, shredding process, and disinfection and produces an end result of biofuel, filters, thickening agents, building materials, etc. Although the solution requires factors that are connected to regulations from the government, safety, environment, available facilities within the country, etc. should be reviewed; the study provides a better option which lessens the impact of improper face mask disposal in the environment (Asim, Badiei & Sopian, 2021). In line with this, the output of this study seeked to contribute to the solution by providing awareness about the problem of the impact of improper mask disposal in the environment through creating Trapunto paintings by utilizing unused non-reusable face masks as its main material. This also allowed me to educate the target audience about the option of valorization by briefly discussing it through this study.

Art as a Tool to Provide Environmental Awareness

There are several artists who produced works of art and used it as a tool to discuss environmental awareness. According to an article (2021) that discusses campaign art shows during London climate action week, it is said that COVID-19 pandemic led to unmanageable medical wastes such as PPE. The hashtag (#) Maskuary Campaign led many artists to participate. The said campaign is about helping make people become aware of mask pollution in February 2021. The artists aim to raise awareness about the environmental pollution from single-use plastics such as face masks

(Ozelli S., 2021). For example, Ilhan Sayin, an environmental artist, created a mixed media painting and directly pasted a non-reusable mask to the surface of the painting. It is entitled "Spring Amidst Mist and Masks" to increase public awareness about the impact of face masks wastes in the environment amidst COVID-19 pandemic (Ozelli S., 2021). For the output of this study, I utilized unused non-reusable face masks. Although I discuss a similar topic of using art to provide environmental awareness amidst COVID-19 pandemic, this study only focuses on the impact of improper face mask disposal in the environment. Moreover, the output of this study used a different method. I did not use fabric canvas nor paste the face mask on the surface of the painting. Instead, the face masks that were used were sewn and quilted together to create the canvas for the Trapunto paintings.

Trapunto Painting by Pacita Abad

According to Hemmings J. (2020), Trapunto is a quilting technique that was used and experimented by a Filipino artist Pacita Abad in the late 1970s. She utilized stuffed canvases and stitched it before putting a paint on it and adding layers of colorful textiles and found objects such as sequins, buttons, shells, etc. Pacita Abad used vibrant colors upon creating her Trapunto paintings and combined different styles, techniques and subjects that are related to her travels that goes beyond different cultures with diverse traditions as part of her experiences of being an immigrant. She used Trapunto painting as an avenue to tell not only her experiences during her travels but also to voice out her advocacies, views, and opinions when it comes to global social issues (Brooklyn Museum, n.d.). In relation to the output of this study, the Trapunto paintings that I created used a similar approach where the canvas have two layers and was stitched and padded to raise some parts of the paintings to create a three-dimensional (3D) effect; although, the I did not use the same materials that Pacita Abad used upon creating my Trapunto paintings. Instead of using colorful textiles or fabric as the canvas, I utilized unused non-reusable face masks as its canvas. I also focused on using plastic objects found that can be seen within my household such as plastic bags and bubble wrap and repurposed it to produce the whole output of my study.

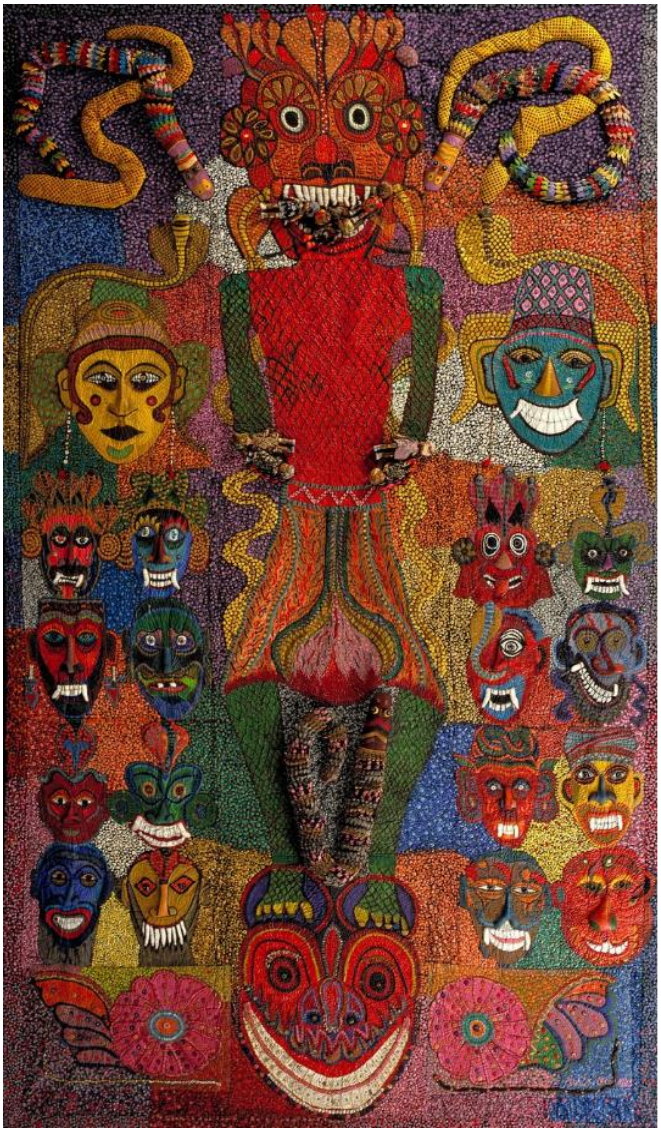
Going further, I have also researched related works that are cited as an avenue to analyze how I conceptualized the outputs of my study and how it was used as a foundation to come up with a visual representation. In addition, some related works are discussed only for the relevance of its process to the output of my study; some related works are discussed due to its connection to the topic or subject that is being tackled.

Review of Related Works

This part of my study focuses on discussing the techniques that were used to create my Trapunto paintings, the materials used or explored, and the relation of aesthetics that served as the basis on how I conceptualized and relate the creation of a visual representation in a form of art through connecting it to the materials used, themes, colors, and symbolisms that allowed me to create the overall design of the outputs of my study. Moreover, this part also discusses the art movement that I used and how it became relevant to the meaning and symbolism of my Trapunto paintings and how it justifies its overall design.

Figure 2

Pacita Abad, Marcos and His Cronies, 1985

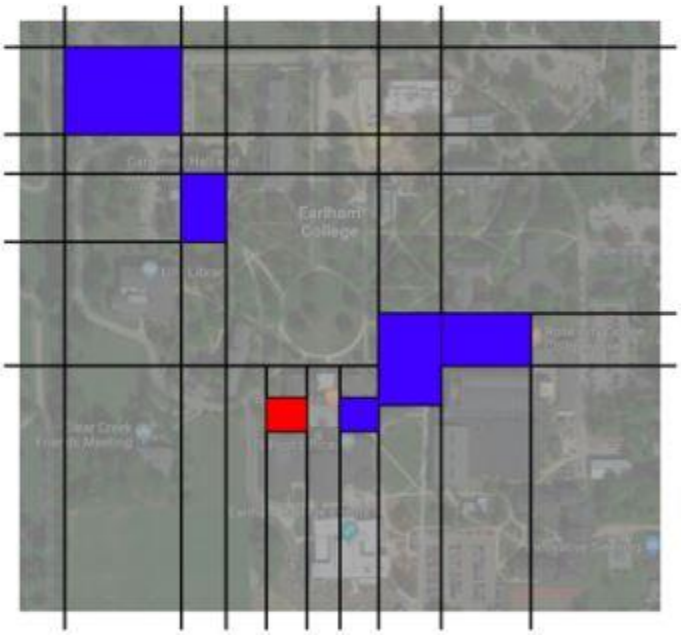


The 16.42 ft. by 9.58 ft. Trapunto painting by Pacita Abad entitled “Marcos and His Cronies” used colorful collage textiles that were hand-sewn and were padded inside in order to raise some parts of the painting that creates a three-dimensional (3D) effect. According to Rubio P. (2020), the materials that were used in the Trapunto painting as well as the design was highly influenced by African masks, Nepalese, Tibetan thangkas, and portrayal of deities painted in cloth. It is said that the painting is a representation of the atrociousness and corruption in the Philippines under the governance of the dictator Ferdinand Marcos.

The artwork was made by using acrylic and oil paints along with sewn or pasted mirrors, shells, buttons, glass beads, and gold thread. In line with this, my goal is to make use of the Trapunto painting technique to create the output of this study. I also relate the output of this study to the discussed painting above since they both give an awareness about the artist’s advocacy about the issue that she is trying to portray and voice it out by visualizing it through Trapunto painting. Although I did use the technique as an avenue to provide and raise awareness about the impact of improper face mask disposal, my aim is to use different set of materials to relate the topic and the gap that my study is trying to fill by utilizing unused non-reusable face mask as a replacement to the colorful textiles as a canvas. The plastic objects found that can be seen within my home are the replacement to the mirrors, shells, buttons, and other objects that were used by Pacita Abad upon creating her Trapunto painting. In addition, my Trapunto paintings represent the impact of improper face mask disposal in the environment through time.

Figure 3

Sara Salloum, An Artistic Data Visualization of Air Quality at Earlham College, 2019



The digital artwork created by Sara Salloum was inspired by Piet Mondrian's *Composition with Red, Blue, and Yellow, 1930*. It used simple shapes that were defined using horizontal and vertical lines. In Salloum's version, she used it to create a visualization of air pollution data in Earlham College.

She aims to spread awareness by creating an informative data visualization that is aesthetically pleasing with the use of art and inspired art style. The red shapes indicate a high value returned by ECAir, a tool that gathers pollution data on campus. The yellow shape indicates medium, and blue indicates low. In Salloum's research, low is good quality air and high is bad quality air. For further explanation, the artist used the shapes and its size to determine the area where the data was collected, and the lines symbolizes the distance between the buildings within the campus. Furthemore, the researcher utilized Cawthon and Moere's study about the effect of aesthetics on the usability of data visualizations where the result was that viewers show a higher level of curiosity and patience upon looking at an attractive visualization. Thus, the researcher utilized art to create unique and interesting data visualization that fit into the space where the target audiences could see it that helps draw their attention and made them curious as well as ask questions that increase their overall awareness about the topic that the visual representation raises (Salloum S.,2019). In line with this, the output of this study provides a visual representation that uses the theory of Semiotics and Structuralism where the objective is to communicate the problem to the target audience through Trapunto paintings. By integrating art with the data that I wanted to spread, it helped spark the target audience's curiosity and allowed them to inspect

the overall meaning of the Trapunto paintings that helped increase their awareness about the impact of improper face mask disposal.

Figure 4

Artur Bordalo, The World's Most Dangerous Predator - Plastic, 2019

The artist Artur Bordalo, more known as Bordalo Segundo (II) used discarded objects, appliances, aluminum cans, old tires, toys, and other materials that were made of plastic to create different sculptures such as the one in the picture, shark. He used the said materials to connect his advocacy to his art which is to provide awareness about excessive consumerism and its impact on producing continuous garbage that affects the environment, mainly the species that are living within that environment (Mehla D. n.d.). In line with this, I connected the output of this study to the discussed sculpture since it is related to providing environmental awareness by using plastic objects found. In line with this, the output of this study mainly focused on the impact of improper face mask disposal in the environment. In addition, instead of using discarded materials that can be seen anywhere, upon creating my output for this study, I only focused on using plastic objects found that are available in our household. Moreover, the output of this study did not create a sculpture out of the plastic objects found. I used these as part of the Trapunto painting. Thus, these were stuffed inside the canvas to likewise enhance and achieve the three-dimensional effect (3D) that I intended to do for the Trapunto paintings.

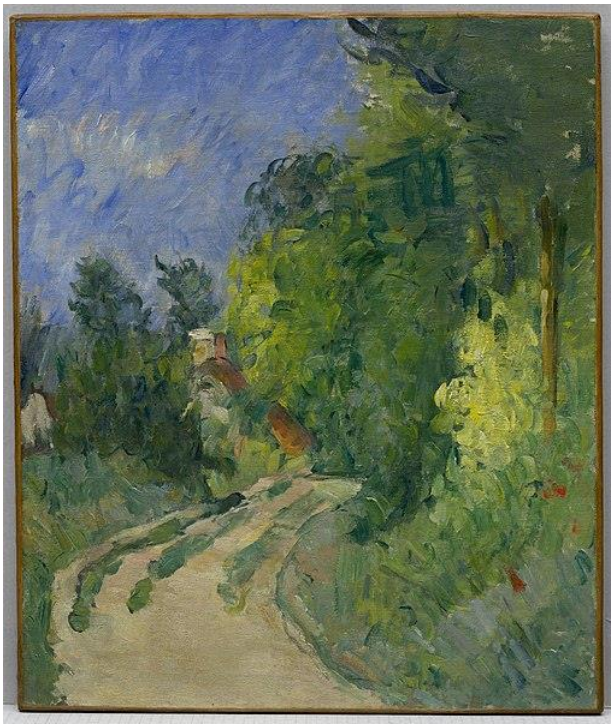
Figure 5

Kniel Nangit, Baby Sea Turtle, 2020

Niel Nangit, an artist from Cebu utilized an unused non-reusable face mask as his canvas for his paintings that he created and labeled as quarantine art. He uses a face mask as a canvas due to quarantine restrictions where shops are closed, and he doesn't have access to buy a canvas (San Juan R., 2020). In line with this, the output of this study also utilized unused non-reusable face masks as the canvas upon creating the mixed-media Trapunto paintings that served as a visual representation of the impact of improper mask disposal to the environment. I did not use the non-reusable face mask individually, instead, it was sewn together to create the canvases. Moreover, I also used acrylic paints with the colors that my target audience had given to express the emotion they felt about the impact of improper face mask disposal.

Figure 6

Paul Cézanne, la route tournante en sous-bois, 1973



Paul Cezanne is a French and Post-impressionist artist who explored the intricacy of the brush strokes and also used the stylistic manner that he inputed on his paintings where he focuses on how to portray his subjects and input's themes of symbolism into his art. Post-impressionism leans towards abstract dispositions that help express the painting in an expressive and emotional state with the use of colors and strokes (Voorhies J., 2004). In connection to this, one of the outputs of my study entitled "Turning point" used a similar approach. I created a Trapunto painting that also used the style of how the post-impressionism movement artists created their paintings. One example is Paul Cezanne's painting entitled *"la route tournante en sous-bois."* Although I did not lean toward gaining all the characteristics that the reference and the movement has, I used colors that helped express the emotion of the Trapunto painting and was also based more on utilizing the colors and the images as well as the strokes to create a symbolism out of the painting to depict a fragment of my memory of the scenery that was painted for the Trapunto painting.

Figure 7

Jackson Pollock, Blue Poles, 1952

Blue Poles is an abstract expressionist painting created by Jackson Pollock in 1952, it consists of footprints, shards or pieces of glass and multiple layers of paint that enhances its texture. In Pollock's technique, he poured and dripped paint directly onto his canvas, used footprints, and other forms of how to pour the paint in the canvas which created a non-representational art that removed the identifiable subject on the painting itself. Instead, it expresses the emotions through symbolism by the colors used and the process on how the painting was made, when it was created, and the reason behind why it was made. Pollock intentionally experimented with how the splashes are created to communicate or convey his feelings, ideas, and expressions during the creation of the painting (Messham-Muir K., 2015). In line with this, the second painting is entitled "If we don't stop" and it is a non-representational art that falls under abstract expressionism. Instead of creating a scenery full of images and subjects to depict the imagination of how I see or feel the impact of the improper face mask disposal to the environment soon, I utilized the process of how the Trapunto painting was made by using non-reusable face masks as an alternative to bristle brush and dipping it unto the chosen colors of paints and pasting it on the surface of the canvas. This process allowed me to connect the message that was being conveyed by the output of my study. Instead of using the technique of Pollock, I chose to paste numerous face masks that eventually looked like a pile of used or dirty improperly disposed face masks in the natural environment. The face masks were dipped into acrylic paints that created the overall texture and image of the painting which symbolizes the imprint of how the impact of improper face mask disposal can be irreversible if people continue to throw their face masks directly into the environment. Furthermore, I used symbolism in the form of utilizing the darkness and lightness of the colors to convey the emotion and expression that I wanted to imply.

Results and Discussion

For this study, I disseminated two preliminary surveys through an online platform that allowed me to gather quantitative and qualitative data from my target audience. My first preliminary survey focused on getting the information of the number of face masks used by my respondents in a span of one month. My second preliminary survey focused on gathering their insights and emotions about the impact of improper face mask disposal to the environment which was the vital foundation of how I designed my Trapunto paintings that allowed me to create visual representation and helped communicate the problem that I am discussing within my study. The last survey that I conducted is my post-survey which was disseminated after my target audience saw my Trapunto paintings, whether via virtual exhibit or physical exhibit. My post survey was disseminated using Google Forms. The results of my post-survey allowed me to know my respondent's insights about my Trapunto paintings and whether the Trapunto paintings were able to achieve my study's goals and objectives, which is to mainly communicate the problem to them and to help increase their awareness.

Based on the group of text seen above from Figures 3.22 to 3.27 show the recurring dominant themes, visual elements and colors that was noticed by the respondents on the Trapunto painting entitled "If we don't stop". Most of the respondents noticed the textures from the Trapunto painting and the colors used such as blue which they connect with face masks and relate it to the feeling of sadness. They also noticed that the colors and the textures were heavy, which gives an unsettling feeling to the audience. Some of the dominant themes that they noticed are pollution, climate change, improperly disposed face masks and its effects on the environment, and an alarming increase of garbage such as face masks. One respondent answered that the Trapunto painting does not have a focal point, but the colors guided him to explore each part of the art and not solely focus on one part of the painting. Moreover, one respondent answered that he felt neutral about the abstract painting and chose the neutral side of the curiosity scale, whereas most of the other respondents stated that it's brimming with turbulence, it looks chaotic, alarming, and concerning. They also stated that it has intense colors such as blue which they relate to the color of face mask and plastic that gives the feeling of concern, confusion, and deep sadness. These statements show that the Trapunto painting entitled: If we don't stop", as a visual representation, was able to also induce certain emotions and memories that triggers most of the respondents to feel alarmed and aware of the problem about the impact of improper face mask disposal. In addition, it also made them aware about the other environmental pollution and concerns while examining the Trapunto painting.

Conclusion

Improper face mask disposal provides a negative effect to the environment. According to the answers of the respondents, it shows that 80% of them witnessed littered used face masks on the streets, and 60% answered that they also witnessed improperly disposed face masks on grassland and bushes within their subdivision. In addition, based on the first preliminary survey that I conducted, it also shows that the respondents used 3,300 face masks in a month. Results also show that most of the respondents felt sad, angry, and disgusted when they saw photos of improperly disposed face masks on different areas such as the ocean, street, grass, etc. and they relate those feelings into colors. Based on the results, it shows that they relate color blue with sadness, red with anger, and they relate colors black, green, gray, and brown to pollution and dirty surroundings that are brought by improper face mask disposal.

Thus, I provided visual representations through my Trapunto paintings, and it helped raise my target audience's awareness about the impact of improper face mask disposal to the environment. For the results of this study, based on the post-survey, I was able to assess the respondents' insights about the output of this study. It showed that the Trapunto paintings helped raise their awareness and further see the impact of improper face mask disposal in the environment. During disseminating the post-survey and providing the virtual exhibit for the target audience, I have observed that a short-term exhibit within their neighborhood is needed for the other respondents to physically see the Trapunto paintings. This was made possible due to lesser restrictions for gatherings during COVID-19 pandemic this month of June 2022. In addition, based on the answers and insights given by the respondents from the post-survey, it shows that the outputs of this study effectively communicated the problem to my target audience. Furthermore, my target audience was able to relate the connection of the materials that I used through our shared experiences and memories about the impact of improper face mask disposal using the respondent's answers from the preliminary survey. This resulted in the positive outcome of this study which proves that using Trapunto painting and exploring its materials were able to help raise their awareness about the discussed problem.

Recommendations

Research Topic

This research is still open for improvements in terms of the timeline of how the preliminary surveys were created and conducted. I created two preliminary surveys, the first preliminary survey gathered 100 respondents, but the second survey only gathered 20 responses. My target respondents for the first preliminary survey are the same as my target respondents for the second preliminary survey. Some of them do not have time to answer multiple preliminary surveys. Thus, proper planning of the survey questions should be considered in order to not repeat or create more than one preliminary survey in order to achieve the expected number of responses in a given time frame. The second preliminary survey was conducted during the production stage of the output of this study, it has less time to be disseminated and the responses were collected accordingly, but its results are still relevant to the production of my Trapunto paintings. Lastly, due to lesser community restrictions for gatherings during COVID-19 pandemic during the month of June 2022, a longer duration of the personal physical exhibit is still needed to those who are near our household for the other respondents to see the Trapunto paintings. This will enable me to reach all respondents, gather more data, and provide awareness about the impact of improper face mask disposal in the environment whether online and in-person.

Creative Process

The process of how the two Trapunto paintings that were made as the output of my study can still be improved in terms of the materials used and the timeline of the production of my Trapunto paintings. The Trapunto paintings can still be improved by the stitches' stability and the consistency of the running stitch, specifically the size and length of the stitches to further secure the plastic stuffing between the two-layered canvases. For the materials used, I only utilized available materials during Alert Level 3 restriction. I used an alternative paint and utilized Boysen water-based acrylic paints, but for further improvement of the outputs, its process, and the lifespan of the Trapunto paintings, artist grade acrylic paints are also suggested. Furthermore, I used the same brand and same color of non-reusable face masks that proves the consistency of the canvas when it comes to its design and material structure that also helped me during the sewing process of the two-layered canvases. In addition, I only used color black and white threads, but using different colors of threads based on the colors of each representational or non-representational form that can be seen on the paintings can help highlight its three-dimensionality. Lastly, following the Gantt chart and the production timeline can further help me to plan a more efficient way of working and creating the output, securing its threads, and enhancing the overall aesthetic of the Trapunto paintings. Lastly, it showed that two (2) of the respondents were not able to connect with the Trapunto painting entitled “If we don’t stop” due to its abstract form and the colors used. These recommendations are vital for future references and future researchers upon creating an effective visual representation that can help communicate the problem to their target audience.

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