

Materials Selection in the New Normal Era of COVID-19 for Agung Sedayu Group's Office Workstation

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ABSTRACT

An outbreak of a disease known as Coronavirus disease or COVID-19 has hit almost all over the world. The COVID-19 pandemic has drawn in a lot of consideration regarding innovative methods and technologies to suppress the spread of the virus. In order to reduce the spread of the COVID-19 virus, hygiene is the main thing that needs to be considered. The changes in workplace furniture are necessary to support the various new activities that will be carried out, because most activities are related to furniture. This project aims to support the safety and comfort of workers in the new normal era to prevent the spread of COVID-19. Therefore, each piece of furniture used must pay attention to various new standards, including technical and non-technical standards. The design process method consists of a few simple steps to achieve the proper results. The use of materials that are easy to clean and disinfect, antimicrobial materials, as well as the addition of elements that can reduce the possible spread of the viruses, are expected to help maintain the Agung Sedayu Group's office environment, also to ensure the well-being and productivity of the workers during this era.

Keywords: material, office, pandemic, virus, workstation

1. INTRODUCTION

In early 2020, the Director General of WHO officially announced that the COVID-19 disease outbreak was characterized as a pandemic [1]. In Indonesia itself, as of 9 July 2021, the number of daily cases has increased to 38,124 people [2]. Cumulatively, from 3 January 2020 to 5:29pm CEST, 9 July 2021, there have been 2,455,912 confirmed cases of COVID-19 with 64,631 deaths [3]. It can be seen that the COVID-19 cases are still very high, thus it is unlikely that the COVID-19 will no longer be an issue in the near future.

The government has pursued various policies to reduce the spread of COVID-19. One of the policies that received a lot of attention is work from home policies [4], because numerous of people feel significant differences from these policies, such as an alternate workplace atmosphere than expected, communication between workers that must be done virtually, to inadequate facilities. These things greatly affect the productivity of the workers. Therefore, it is important to reconsider the basic reasons behind the need for a shared workplace.

In the new normal era of COVID-19, changes in the criteria of shared workplace are necessary to support various new activities that will be carried out, particularly in furniture, because most of the activities done are correlated with the furniture. Therefore, every piece of furniture used should focus on various new standards, both technical and non-technical. Hygiene is something that should be considered

to reduce the spread of the SARS-CoV-2 (COVID-19 virus). Despite the fact that SARS-CoV-2 infects people mainly through contact with the respiratory droplets that contain the virus, it is still possible to become infected by touching contaminated surfaces, although it is a low possibility [5].

A study by The New England Journal of Medicine [6] found that surfaces like plastic and stainless steel are more susceptible to viruses. The study found that the virus can be discovered on those surfaces for as long as three days.

Another study that investigated the stability of the SARS-CoV-2 virus is from The Lancet [7]. The study also concluded that the SARS-CoV-2 virus was more stable on smooth surfaces.

A study by ACS Nano [8] provided some examples of materials and coatings that has antimicrobial properties, including copper, silver, zinc, and titanium dioxide (TiO₂). These materials are appropriate to be used for furniture design in this new normal era.

However, the guidelines published by CDC [9] said that cleaning and disinfecting surfaces would be more effective in preventing the spread of bacteria and germs.

Therefore, it is also necessary to use materials that are easy to clean. Non-porous materials are one of the examples. These materials have denser pores, thereby reducing the absorption of liquid and air. Some materials that have non-porous surfaces are glass, plastic, metal, lacquered wood [10], and quartz [11]. These materials are also suitable to be used in the new normal era, because of the ability to

minimize dirt and germs from accumulating, besides being easy to clean and disinfect. Material selection in the new normal era is very important in order to reduce the potential for the spread of the SARS-CoV-2. Optimal materials selection in the office furniture can ensure the well-being and productivity of the workers.

1.1. Related Work

The design method used in this project depends on the design process diagram proposed by Rosemary Kilmer and W. Otie Kilmer [12] to achieve the appropriate results.

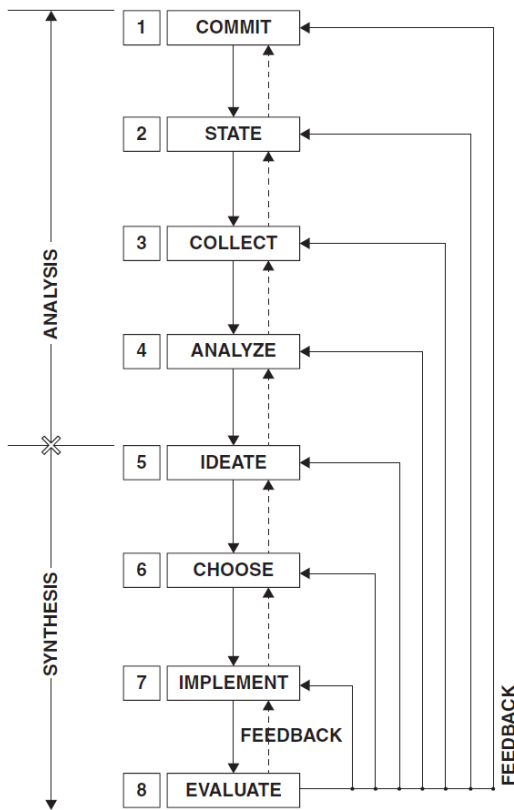


Figure 1 Kilmer’s design process diagram

Table 1 Design parameters for the workstation in the new normal era of COVID-19

No.	Parameters
1	Uses materials that are easy to clean and disinfect.
2	Uses antimicrobial materials.
3	Adds panel or partition dividers.

Source: Results from personal data processing, 2021

1.2. Our Contribution

This paper presents some scientific contributions to educational institutions in furniture design regarding the

The initial process starts with data collecting and problem tracking, to be specific by collecting literature, news, and readings that are related to the topic discussed, namely the use of materials on workstation in the new normal era of COVID-19.

Then continuing with the state process by compiling the regular workstation design parameters, design parameters for the workstation in the new normal era of COVID-19, also the technical and preferential requirements for the workstation design, as well as describing the problems that will be the main point of the design.

The next process is collecting data through interviews with one of the workers at the Agung Sedayu Group Office to find out the daily activities of the workers.

The analysis process is performed by analyzing the existing problems to find the right solutions, which is applying materials and additional elements on the workstation in order to support the safety and comfort of the user in the new normal era.

In the ideation process, the designer develops the design concept that will be applied to the project by sketching ideas, making design alternatives from the applied concept, and making design developments from the selected alternative schemes.

In the choose and implement process, the designer creates a presentation drawing as the final design result, chooses colors and materials that will be implemented in the design, also creates a digital visualization of the final design.

The last one is the evaluation process, which is a review process of the final design. In this phase, the designer gets an evaluation in the form of feedback.

Parameters for the workstation design in the new normal era of COVID-19:

field of furniture and interior design studies that will enrich the knowledge of furniture and interior design. This research also provides benefits for the target group of commercial facilities, especially office furniture users, to obtain more suitable quality of office facilities. Particularly,

to develop new innovations for the office workplace in the new normal era of COVID-19.

1.3. Paper Structure

The rest of the paper is organized as follows. Section 2 introduces the design concept, which explains the features of this workstation, followed by the material concepts that are applied in this workstation design. Section 3 summarizes the paper and sets out expectations for this paper.

2. BACKGROUND

2.1. The Design Concept

The modular and adjustable design in this workstation can ensure the workers' well-being, comfort, and productivity. Having the additional panels and partition dividers around the table may help to reduce the possible spread of the COVID-19 virus.



Figure 2 Workstations grouped
Source: Designed by Dianyi Esther, 2021



Figure 3 Workstations grouped
Source: Designed by Dianyi Esther, 2021

This workstation can be adjusted by changing the height of the desk, moving the mobile file cabinet, and turning the panel dividers to fit the needs of the user.



Figure 4 Workstation adjusted
Source: Designed by Dianyi Esther, 2021



Figure 5 Workstation adjusted
Source: Designed by Dianyi Esther, 2021

The dimensions of this workstation are designed as ergonomics as possible based on the Indonesian anthropometry data [13].

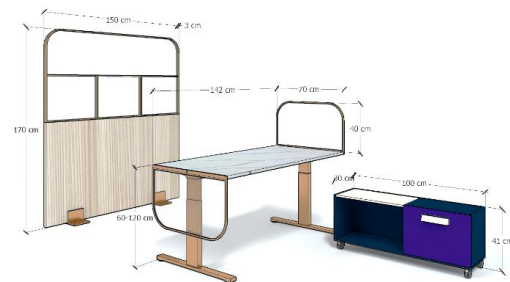


Figure 6 Workstation dimensions
Source: Designed by Dianyi Esther, 2021

2.2. The Materials

The materials selection for this workstation design has been adjusted based on the regular workstation design parameters, and the design parameters for the workstation in the new normal era of COVID-19. The materials consist of copper, glass, quartz, HPL (High Pressure Laminate), and antibacterial HPL (High Pressure Laminate). The main colors are chosen according to the corporate colors of Agung Sedayu Group, which are blue and white.

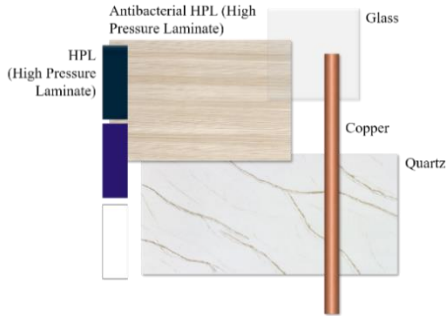


Figure 7 Material board
Source: Designed by Dianyi Esther, 2021

Table 2 The Workstation’s Specifications

Specifications	
Adjustable Desk with Panel Dividers	<ul style="list-style-type: none"> Materials: Quartz table top with copper legs and glass with copper frame panels; Adjustable leg and panel dividers; Dimensions: 142 cm (length) × 70 cm (width) × 60-120 cm (height: from leg to table top), and 40 cm (height: panel dividers).
Mobile File Cabinet	<ul style="list-style-type: none"> Materials: multiplex with antibacterial HPL finish; Movable cabinet; Dimensions: 100 cm (length) × 30 cm (width) × 41 cm (height).
Partition Divider	<ul style="list-style-type: none"> Materials: multiplex with HPL finish and glass with copper frame. Dimensions: 150 cm (length) × 3 cm (width) × 170 cm (height).

Source: Personal data, 2021

3. CONCLUSION

The materials chosen for this workstation is in accordance with the existing parameters, namely the use of antimicrobial materials, non-porous surfaces materials, and addition of the panels and partition dividers. The materials used consist of copper, quartz, glass, HPL (High Pressure

Laminate), and antibacterial HPL (High Pressure Laminate).

The materials selection for this workstation design is expected to help the maintenance of Agung Sedayu Group’s office environment, as well as to ensure the wellbeing and productivity of the workers during this new normal era of COVID-19.

Table 3 Suitability Evaluation Table

Parameters \ Materials	Copper	Quartz	Glass	HPL	Antibacterial HPL
Antimicrobial	✓				✓
Non-porous surfaces	✓	✓	✓	✓	✓
Easy to clean and disinfect	✓	✓	✓	✓	✓

Source: Results from personal data processing, 2021

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