

Adaptation of Space Use during the Covid-19 Pandemic at Costing House Around the Campus Based on Student's Perspective

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Abstract

The very rapid growth of Covid-19 has the potential to change the behavior of residents in boarding houses around campus. Especially at the time of the Face-to-Face Meeting (PTM) decision on campus which made most students worried about the condition of their place of residence. Therefore, based on health protocols, students make adaptations for behavior and activities during the pandemic, especially in boarding houses, so there is a need for research to determine the pattern of changes in student behavior in their boarding houses as a result of changes in habits. The purpose of this study was to identify changes in behavior that occurred in student boarding houses due to the Covid-19 pandemic. The objects taken in this study are settlements around the Ten November Institute of Technology (ITS) campus. This study uses the emic paradigm. This study uses content analysis techniques. The use of content analysis techniques is to describe the results of field surveys and interviews that assess changes in behavior, interactions, and activities of boarding house residents. The results obtained are a comparison of learning about behavior, interactions and activities before and after the Covid-19 pandemic.

Keywords

Covid-19 spread; behavior change; interaction change; activity change; health protocol; boarding house.



I. Introduction

Indonesia as a country with a high population but with a low level of education has its own challenges to overcome the spread of the Covid-19 virus. The existence of Covid-19 forces people to change their behavior to reduce the spread of Covid-19. This change in behavior is due to the existence of health protocols that are believed to be able to reduce the spread. The health protocol known as 5M, namely wearing masks, washing hands, maintaining distance, staying away from crowds, staying away from mobility, must be implemented by the community to prevent contracting the virus (Ministry of Health, 2022). During the period 2020-2022, the number of Covid-19 sufferers in Indonesia has reached 6,045,043 people on April 26, 2022 (Indonesian Covid-19 Task Force, 2022). Indonesia has the 10th highest death toll of 156. 163 people (WHO, 27 May, 2022). This has caused Indonesia to become the epicenter of the growth of Covid-19 in Asia (WHO, 2022). The outbreak of this virus has an impact of a nation and Globally (Ningrum et al, 2020). The presence of Covid-19 as a pandemic certainly has an economic, social and psychological impact on society (Saleh and Mujahiddin, 2020). Covid 19 pandemic caused all efforts not to be as maximal as expected (Sihombing and Nasib, 2020).

During the pandemic since 2020 (Putri, 2020), changes in behavior often occur in all fields, especially places of residence. The housing complex environment of the boarding

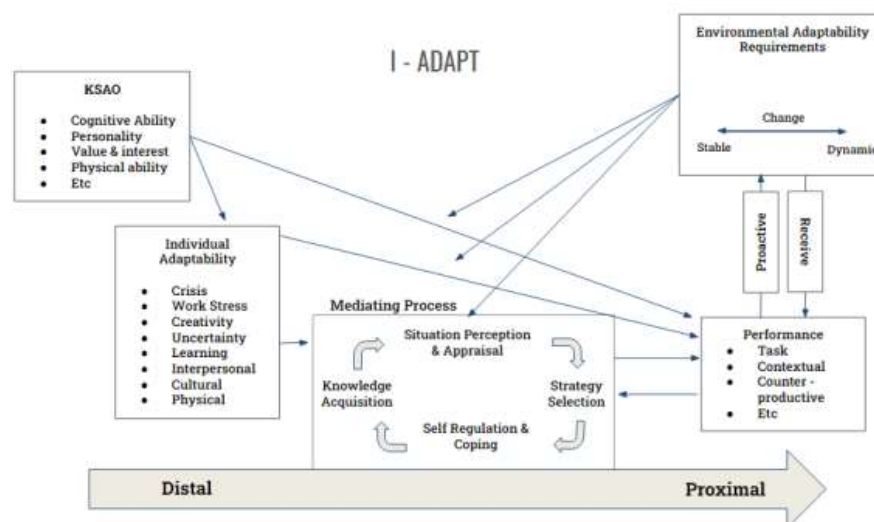
house is quite good even though it is in dense housing. Some of the fronts of houses around the two boarding houses function as sunbathing areas for those who do not have a garden or outdoor space at home (Head of RW 1/RT4 Gebang Putih Village, 2022). Changes in behavior also occur in boarding buildings, students usually use the common room as a place for interaction between boarding house residents before the Covid-19 outbreak. Meanwhile, during a pandemic, boarding house residents carry out strict health protocols and are alert to other boarding house residents. In addition, it should also change the materials used in boarding houses. In the condition of the existing material used, the material still does not use materials that prevent the virus from surviving for a long time so that it has great potential for virus development. In the existing conditions of space use, there is still no space that is suitable for pandemic conditions such as outdoor space, urban farming, and isolation rooms in a boarding house.

Thus, over time, there is a reduction in Work from Home (WFH) which causes adaptation to other boarding house residents in the New Normal period. However, there are differences in family backgrounds which force students to adapt to other people. Adaptation behavior carried out by students is certainly a new thing because it is different when adjusting to their own family is considered easier.

The existence of behavioral adaptations carried out by students can lead to the need for sustainable housing in layouts during the pandemic. The sustainability of the layout aims to reduce the risk of contracting Covid-19 from other boarding house residents which is in line with the goal of Sustainable Development Goals (SDGs) Number 11. The goal of the SDGs is to build cities and settlements that are inclusive, safe, durable and sustainable.

II. Review of Literature

2.1 Theory



Source: Burke, 2006

Figure 1. Theory I-ADAPT

In this theory, there are Knowledge, Skill, Ability, and Other Characteristics (KSAOs) which consist of cognitive abilities, and others capable of influencing individual adaptation to a condition through a mediation process. The process is a round of individual processes, namely the acceptance of knowledge or information, acceptance and assessment of the situation, selection strategies, self-regulation and coping. The mediation process on a person can influence and/or be affected by performance. However, KSAOs and individual

adaptations can directly affect individual performance such as work, tasks, counterproductive performance, and so on. This performance can affect the standards or requirements for environmental adaptation through a proactive attitude, while for an environment that has set environmental adaptation standards, a person is forced to adapt to shape performance through a reactive attitude. According to Septanti (2015), several studies that have been carried out by G. Tipple, 2000; Silas, J 2000; Septanti D, 2000, an important aspect of flexibility in the arrangement, adjustment and addition of space in his residence based on needs at a certain time. The opinion according to Miller (1980) in Lazarus and Folkman (1984), the existence of coping is a learning response behavior that reduces arousal or desire through neutralizing dangerous conditions. adjustment and addition of space in his residence based on the needs at a certain time. The opinion according to Miller (1980) in Lazarus and Folkman (1984), the existence of coping is a learning response behavior that reduces arousal or desire through neutralizing dangerous conditions. adjustment and addition of space in his residence based on the needs at a certain time. The opinion according to Miller (1980) in Lazarus and Folkman (1984), the existence of coping is a learning response behavior that reduces arousal or desire through neutralizing dangerous conditions.

In addition, according to Moore and Marans (1997), the concept of Craik can affect behavior caused by one's personality. It can affect the social system that exists in the environment of a boarding house so that the environmental system can change according to the behavior of the occupants.

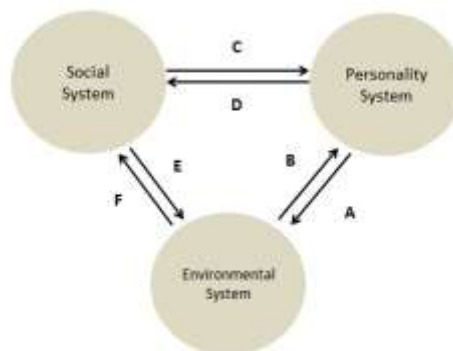


Figure 2. Craik's Concept of Personality Orientation for Environmental Behavior (EB) Research (Moore and Marans, 1997)

III. Research Method

3.1 Preliminary Study

The preliminary study aims to determine the study area. The number of active students at the Sepuluh Nopember Institute of Technology (ITS) Surabaya is 22,353 people (ITS Directorate of Education, 2022). The number of respondents in the preliminary study was 104 respondents from the total ITS students based on the calculation of the Slovin Formula.

The method used is a questionnaire conducted in several places, namely co-working space, ITS library, and its surroundings, there are most of ITS students living in several villages, namely Keputih, Gebang Putih, and Mulyorejo Villages. However, there are a small number of ITS students who live in boarding houses in Kertajaya Village, Manyar Sabrangan, Sutorejo Hamlet, Kalisari, and Kejawan Putih Tambak (Figure 1). Thus, the study area that will be the object of study is the village where most of the ITS students are Keputih, Gebang Putih, and Mulyorejo Villages.

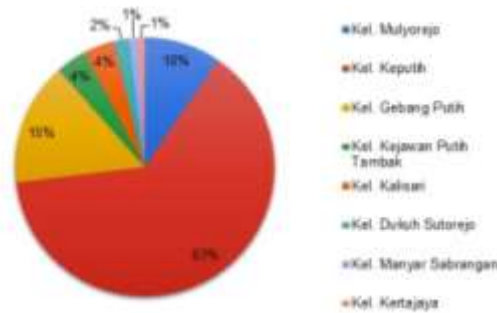


Figure 3. Percentage of ITS Student Boarding Residences

3.2 Boarding House Adaptation Study for Health Protocol

This research method is qualitative research. While the analysis technique uses content analysis through pictures and interviews. This resulted in differences in the behavior of boarding house residents before and during the Covid-19 pandemic. The following table is an indicator of the core research (Table 1).

In this study, several typologies of boarding houses and rooms are divided. The typology of boarding houses to be studied is the single loaded corridor and the double loaded corridor. In addition, the provision of space seen in this study consists of 2 things, including:

- Provision of communal space consisting of a shared bathroom, terrace, balcony, living room/hall, kitchen, clothes line, and laundry area
- Provision of health protocols consisting of a sanitation room for washing hands

Table 1. Indicators and Operational Definitions.

Indicator	Operational definition	Source
Layout	A layout order condition	Tokazhanov, et al (2020), Pinheiro and Luis (2020); Brkanic (2017)
Electric network	Availability of power grid	Brkanic (2017)
water network	Availability of water network	
Internet Network	Availability of internet network	
Provision of communal space	The existence of communal spaces such as kitchens, parking lots, corridors, balconies, laundry areas, clothes drying areas	Muslim, Karim, and Abdullah (2012)
Provision of health protocols	The existence of elements of health protocols such as sanitation areas in front of boarding	Pinheiro and Luis (2020);

Indicator	Operational definition	Source
	houses or hand sanitizers at several points	
Material use	Materials used in housing that are resistant to viruses or bacteria.	Hizra et al (2021); Dietz in Pinheiro and Luis (2020); Pinheiro and Luis (2020); D'Alessandro et al (2020).

IV. Result and Discussion

The field survey or observation resulted in the identification of the typology of the boarding house and changes in the function of the space in the boarding house. The taking of the two boarding houses is representative of the type of boarding house where there is no standard health protocol during the pandemic in the design aspect. The boarding houses around the ITS campus consist of various facilities such as shared bathrooms, shared kitchens, living rooms or halls, terraces, balconies, and others. In addition, there are corridors that are facilities as well as differentiating characteristics of a dwelling. The characteristics of boarding houses around the ITS campus have several typologies, including:

a. Kos Type A (Single Loaded Corridor)

This type of boarding house has the largest communal space facilities, namely parking lots, shared rooms, shared bathrooms, communal kitchens, clotheslines, laundry rooms, terraces, stairs, balconies, sanitation rooms, and corridors. This type of boarding house resembles a student dormitory provided by the campus.

b. Kos Type B (Double Loaded Corridor)

This type of boarding house is the same as type B. The difference between type B and A is that there is no common room or hall and the form of a boarding house has a double loaded corridor. This type of boarding house resembles apartments and hotels.

4.1 Boarding House Adaptation to Health Protocol

The behavior of residents before the pandemic has differences compared to during the pandemic. This is due to the adaptation of boarding house residents' behavior to face the pandemic period with the aim of avoiding the spread of Covid-19. The behavior that appeared in the boarding house before the pandemic period during the interview did not limit the interaction with other boarding house residents as shown in Table 2.

Table 2. Results of Observation of Boarding Tenants' Behavior in the Period Before the Covid-19 Pandemic

Facilities and infrastructure	Variable	Cost Type A	Cost Type B
Provision of communal space	Parking lot	Residents interact in the parking lot when meeting with their boarding friends.	
	Shared bathroom	Students communicate when queuing in front of or around the bathroom.	
	Common kitchen	Students can only use the kitchen	Students use the kitchen with their

Facilities and infrastructure	Variable	Cost Type A	Cost Type B
		alternately because there is only 1 stove available.	friends while communicating.
	Corridor	Residents use the space to play online games, chat, and so on.	Corridors are used by rooms owned by tenants.
	Terrace	Occupants who use the terrace are tenants only.	
	Balcony	Students use the space to interact with their friends.	Residents use the balcony to relax, chat, etc. but only for rooms that have a balcony.
	Living room/Hall	There isn't any	Residents use the hall as a place to relax with their friends.
	Ladder	Students use the stairs at the same time without worry.	
	Clothesline	The occupants use the clothesline at the same time as their friends so they can interact.	
	Laundry place	Students use the laundry room simultaneously with their friends while interacting.	
	Janitor's place	Janitor room is only used by the owner of the boarding house.	
Provision of health protocols	Aperture/Ventilation/Window	Students use ventilation only by opening windows.	Students use ventilation by opening windows and doors.
	Anti-bacterial material	The boarding house owner has not provided anti-bacterial material in his boarding house	
	Sanitation room (washing hands)	The boarding house still does not have a sanitation room so students maintain protocols based on their respective interests.	

In addition, there is also a different behavior of boarding house residents during the Covid-19 pandemic, especially in communal spaces. This is because the communal space is a space that is shared with other boarding house occupants. Thus, the communal space can be a place of interaction for the residents of the boarding house. However, there are some differences in type A and B boarding houses as shown in Table 3.

Table 3. Results of Observation of Boarding Tenants' Behavior During the Covid-19 Pandemic

Facilities and infrastructure	Variable	Cost Type A	Cost Type B
Provision of communal space	Parking lot	Residents use the parking lot to interact with their boarding friends because they can do physical distancing considering the parking lot is quite large.	
	Shared bathroom	Residents use the bathroom alternately in an effort to reduce the spread of Covid-19. Sometimes students chat with their friends while taking a shower.	
	Common kitchen	Residents use communal kitchens interchangeably due to the lack of stove facilities.	Residents use the communal kitchen interchangeably due to the lack of interaction with one another.
	Corridor	The occupants use it as a place to greet their boarding friends.	The corridor is only used by room tenants who have it as a private lounge.
	Terrace	Residents use it as a place to chat with friends or other boarding house residents.	
	Balcony	Residents use it as a private and communal space to chat with friends, play games, and so on.	There is a balcony that is usually used as a place to chat before the pandemic but is no longer used during the pandemic.
	Living room/Hall	There isn't any	There is a living room

Facilities and infrastructure	Variable	Cost Type A	Cost Type B
			but it is no longer used by residents because of their individual behavior and keeping their distance.
	Ladder	Residents take turns using the stairs to avoid the spread of Covid-19 and greet their boarding friends.	
	Clothesline	The use of clotheslines is carried out by residents alternately except with friends they know or fellow college majors.	
	Laundry place	The laundry area is converted into 1 with a bathroom.	There is a laundry area as well as a clothesline.
	Janitor's place	Located at the back near the bathroom. Cleaning activities are carried out by the owner of the boarding house in the communal section and carried out by students in the bedroom section.	
Provision of health protocols	Aperture/Ventilation/Window	Residents always open windows and doors to get airflow.	The occupants just open the windows to get airflow from outside.
	Anti-bacterial material	There is no anti-bacterial material in the boarding house, so students use anti-bacterial sprays sold in supermarkets and regularly wash bedding.	
	Sanitation room (hand washing)	There is no sanitation room for washing hands in front of the boarding house, so students usually use the bathroom as a place to wash their hands or personal hand	

Facilities and infrastructure	Variable	Cost Type A	Cost Type B
		sanitizer after arriving at the boarding house.	

4.1 Existing Behavior

Based on the adaptation of the boarding house that has been described, as for the behavior contained in each type of boarding house from several boarding house residents.

a. Boarding House Type A

This type of boarding house is in the form of a single loaded corridor where there are several uses of space, namely motorbike parking, terraces, balconies, kitchens, bedrooms, bathrooms, stairs, and clotheslines. In this boarding house there is 1 type of room, namely a room with an outside bathroom. The following is the area of each room in the boarding house: (Image 1).

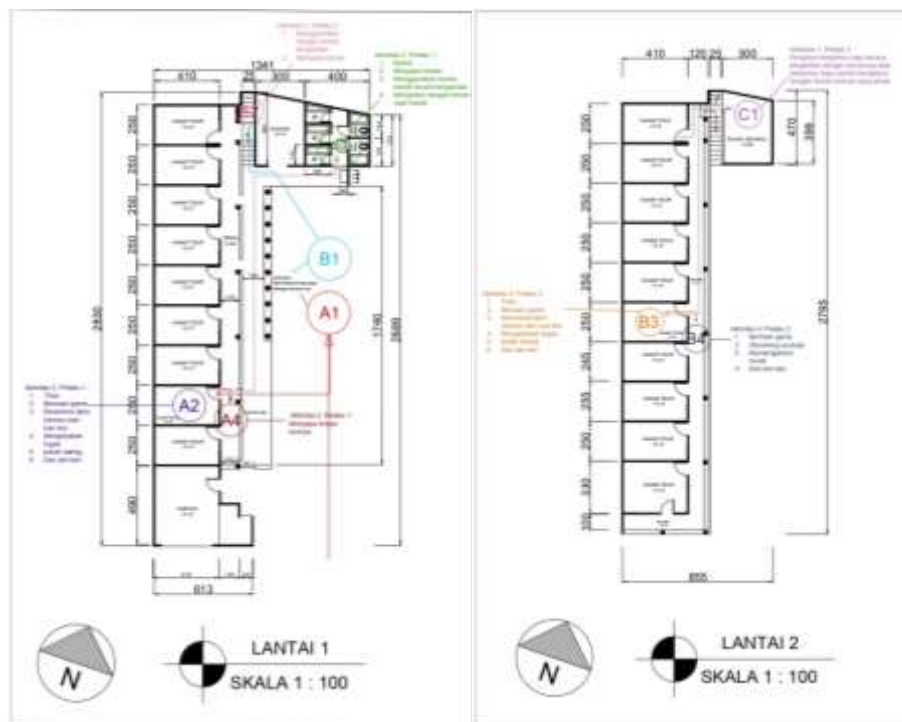


Figure 4. Plan of a Type A boarding house in Gebang Putih Village (Field Observation, 2022)

In addition to the boarding house in Gebang Putih Village, there is also a boarding house in the form of a Single Loaded Corridor in Mulyorejo Village. The boarding house has several space functions, namely a motorbike parking area, terrace, balcony, kitchen, bedroom, bathroom, stairs, and clothesline. In this boarding house there is 1 type of bedroom with an outside bathroom.



Figure 5. Plan of a Type A boarding house in Mulyorejo Village (Field Observation, 2022)

In both buildings, there are characteristics that are in a boarding house with a Single Loaded Corridor model. The building model has a terrace and balcony that is used by the occupants of the room personally. It can be a private relaxing space for students such as playing games, listening to music, and so on.

b. Boarding House Type B

This type of boarding house is located in Keputih Village. In this boarding house there are several functions of space consisting of parking area, bedroom, bathroom, stairs, corridor, clothesline, sanitation room and balcony room.

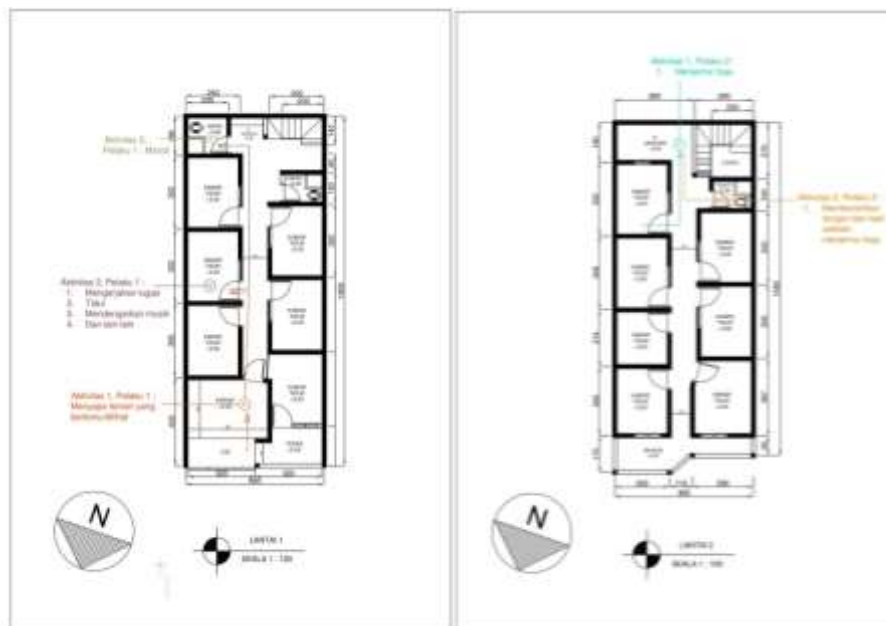


Figure 6. Plan of a Type B boarding house in Keputih Village (Field Observation, 2022)

Meanwhile, the boarding house in Gebang Putih Village has 3 floors with motorbike parking facilities, bedrooms, outdoor bathrooms, living room/family room, and laundry room. The boarding house for women is in the form of a Double Loaded Corridor.



Figure 7. Plan of a Type B Boarding House in Gebang Putih Village (Field Observation, 2022)

Based on the results of observations of activities in several types of boarding houses, the activities of boarding house residents in several space functions during a pandemic, including:

- Room: sleeping, doing assignments, online lectures, drawing, and so on
- Bathroom: shower, wash clothes, etc
- Stairs: greeting friends or interacting with friends
- Kitchen: cooking
- Clothesline area: residents dry clothes in alternating ways
- Laundry place: for some boarding houses that provide a laundry area, residents usually take turns washing clothes with their boarding friends
- Corridor :
 - Share single loaded corridor playing online games, listening to music and more
 - For the double loaded corridor, there are no more activities during the pandemic

Thus, this type of boarding house has the lowest level of privacy characteristics due to the presence of the most communal space functions. It can be concluded that the privacy space in this type of boarding house is only located in the bedroom.

In addition to the boarding house typology, there is also a boarding room typology that will be seen to meet the health protocol needs during a pandemic. This room typology is an aspect of student personal comfort which lies in the type of room occupied. In boarding houses around the ITS campus, there are several types of rooms and any furniture facilities offered, including:

- Room type
 - One room for own private bathroom 15.8%
 - One room for own bathroom outside as much as 0.9%

- One room for two as much as 22.8%
- One room for more than 2 people as much as 60.5%
- b. Furnishings Fasilitas
 - Beds, tables, chairs, wardrobes and air conditioning by 50%
 - Beds, tables, chairs, cabinets and fans as much as 26.3%
 - 50% of beds, tables, chairs, and cupboards
 - Bring your own equipment 1.8%

Based on observations, there are several health protocol strategies that can be applied to boarding houses in each boarding typology, including:

a. *Single Loaded Corridor*

- Strategy 1: Provision of a sanitation room in front of the boarding house
- Strategy 2: Procurement of a shared kitchen in the back area of the boarding house with an adequate area
- Strategy 3: The bathroom is recommended to use a shower to avoid the Covid-19 virus surviving in puddles
- Strategy 4: The distance from door to door is at least 2 meters to maintain physical distancing
- Strategy 5: Provision of a sanitation room in the clothesline area
- Strategy 6: Adding greenery at several boarding points such as in front of boarding rooms and on terraces or corridors

b. *Double Loaded Corridor*

- Strategy 1: There is a sanitation room in front of the boarding house
- Strategy 2: Giving a distance of 2 meters in the living room / common room
- Strategy 3: Procurement of a spacious and adequate kitchen
- Strategy 4: Procurement of a sink in the clothesline
- Strategy 5: Use of a shower in the bathroom

Based on the two tables above, the use of space that can have an impact on Covid-19 is a shared bathroom, communal kitchen, corridor, living room, stairs, clothesline, and laundry room. This is because the use of communal space is a core part of the socialization infrastructure in boarding houses.

Thus, according to Moore and Marans (1997), the personality system can influence the social system. This is because basically humans have several characters, namely introverts and extroverts. This type of character can trigger the level of social interaction of boarding house residents. After that, the social system can affect the environmental system. This can be an outcome of the use of space needed for boarding house residents. For example, in a boarding house there is a student character who has an extroverted nature that can affect social interactions with his boarding friends. At a high level of interaction, there is the possibility of communal spaces needed to support student interactions as boarding house residents such as public kitchens, living rooms, balconies, and so on.

The use of communal spaces that can change function during a pandemic requires additional materials to reduce the virus's longevity. In addition, the sanitation room is a space needed during a pandemic in front of the boarding house to maintain the cleanliness of the boarding house occupants or friends before entering the boarding house.

According to Burke (2006), the performance of Knowledge, Skill, Ability, and Other Characteristics (KSAOs) underlies the adaptation of a student and the attitude of his performance to the burden, atmosphere, counterproductivity, and others. Both of these things can end up in a mediation process which consists of several things, namely knowledge acceptance, situation perception and acceptance, selection strategies, and Self-Regulating and Coping during a pandemic in boarding houses. However, a student is able

to process mediation first to produce performance as a person's proactive attitude to change his environment. It can also happen the other way around if there are design standards or the environment is changed without embracing the proactive attitude of students in their boarding house, which is called reactive attitude.

In addition, Miller's theory (1980) in Lazarus and Folkman (1984) occurs in students as boarding house residents who carry out coping behaviors to reduce enthusiasm through neutralizing dangerous conditions by adapting during the Covid-19 pandemic in their boarding house. This study also proves the theory according to Septanti (2015) that an important aspect of flexibility in the arrangement, adjustment and addition of space in his residence is based on the needs of students during the Covid-19 pandemic. Most of these needs are located in their boarding rooms, which are the most important rooms because of the convenience of providing privacy for students as boarding house residents.

According to Sun et al (2014), anti-bacterial materials consist of anti-bacterial plastics, ceramics, and textiles. This is because there are no materials containing these three elements in boarding houses. Thus, anti-bacterial materials need to be added to furniture or materials that are directly interacted by students.

V. Conclusion

The existence of Covid-19 since 2020 has caused behavioral changes in boarding house residents. This can cause changes in the interaction between residents. There are several categories of boarding house facilities and infrastructure affected by Covid-19, namely the provision of communal spaces and health protocols. Significant behavioral changes occur in communal spaces, namely shared bathrooms, clotheslines, communal kitchens, balconies, corridors, terraces and common rooms or halls. This is because there are changes in the interaction between residents who are more individual.

Thus, the communal space is an important space during the Covid-19 pandemic. This has become the focus of a separate discussion for the development of material technology that can coat frequently used materials such as wood, walls, and others.

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