

Identification of Quality Factors in the Study Environment of Architecture Students in Supporting Online Learning in the Pandemic Period

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Abstract—The psychological condition of a person while studying is influenced by the conditions of the physical environment. The implementation of online learning due to the COVID-19 pandemic has an impact on the implementation of learning because not all homes prepare a special room for childrens learning. This study identifies a description of Architecture students perceptions of the quality of their learning environment during the pandemic. This quantitative descriptive study was conducted using a questionnaire survey to 148 respondents. The data sample is Architecture students at levels 3 and 4 with different learning experiences before and during the pandemic. This study describes the tendency of a pretty good student perception (67.16%) about the quality of the learning environment on the factor of space elements. Perception Space components that are not fixed, namely neatness and smells are prominent elements (87.95%). In addition, there are differences in perceptions of environmental quality aspects in supporting learning between urban respondents on the flexibility aspect (7.11%), districts on the sound stimulant aspect (5.5%) and women on the flexibility aspect (13.15%) and men on the aspects of natural elements (9.45%).

Keywords—*spatial behavior, psychology of student learning, pandemic period, demographics, gender*

I. INTRODUCTION

The pandemic period causes an emotional response in everyone [1]. According to Architect's Journal Student Survey, about 25 percent of Architecture students experience mental health problems caused by academic burdens.

A person's psychological response is influenced by various factors, both intrapersonal and extrapersonal [2]. Environmental quality is a supporting factor that will create a passion to carry out activities so that they can complete their activities to the maximum. Ishak and Tanjung support this by stating that the physical environment plays a role in creating a passion for productive activities so that productivity and achievement increase [3].

Forms of a comfortable physical environment can increase productivity to create a feeling of security in students against viral diseases that can attack the immune system. Students will feel more motivated and enthusiastic in carrying out academic work if the conditions in the learning environment are by with expectations so that they can improve the learning experience they have.

Learning from home while not all houses are prepared to facilitate children's learning activities, especially students in college also have the potential to increase students' feelings of stress and boredom due to continuous isolation which has the potential to cause anxiety and depression for students. In addition, there may be a risk of violence against children and other external risks that are not detected outside of school. This can be a very tough experience for students especially, in college. As a result of these demands, some students experience a loss of academic motivation and some form of emotional stress while studying at home.

Previous research has investigated the psychological response of students during the Covid 19 pandemic using intrapersonal factors of physical activity [2], Anxiety [4], stress anxiety depression [5], and extrapersonal factors. Disturbance during activities [6], conflict with family [7]. In addition, previous studies have examined environmental psychology in the physical environment; classroom [8], children's playroom [9], government buildings [10], space habitats in space [11]. However, research on the psychological aspects of extrapersonal factors that are space in the house as a place for learning during the Covid 19 pandemic is still rarely mentioned and research related to college students is still rarely mentioned in research related to the psychological aspect of space even though the learning experience in higher education is a stressful life transition from adolescence to adulthood. Furthermore, given that emotional responses have been shown to affect one's health and cognitive abilities [12] and the physical environment has been shown to affect one's psychology [13]. Therefore, researchers view elements of the physical environment as

important mediators for maintaining psychological responses in the learning process.

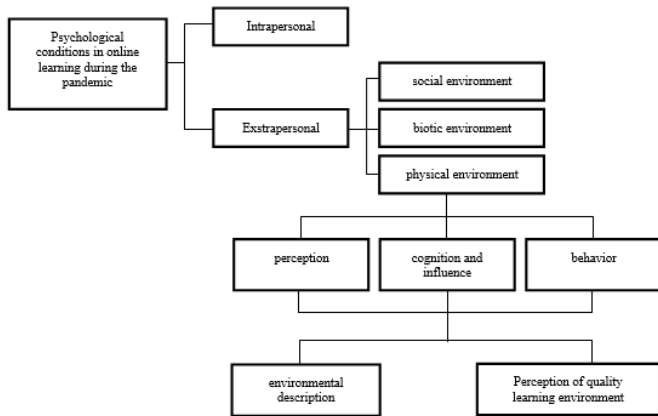


Fig. 1. Creating architectural theory the role of the behavioral sciences in environmental design [14, pp. 84-85].

II. METHODS

This study uses quantitative descriptive research methods because the data collected is closed [15]. Research with quantitative descriptive methods is used to obtain the tendency of perceptions about aspects of environmental quality that are considered to support learning from home during the pandemic.

A. Method of Collecting Data

The data collection method is in the form of a questionnaire with a measuring instrument in the form of a Likert scale with a scale of 1 (Strongly Agree) to 6 (Strongly Disagree) then distributed through social media platforms. Participants in this study totaled 236 people. The researcher determines the minimum sample limit that can meet the 5% margin of error by entering the margin of error into the slovin formula, the researcher will see the characteristics of the respondents, totaling 148 respondents who are Architecture students who are in the age range of 20-23 years with a total of 48 people for male respondents and 100 people for female respondents who come from various demographic backgrounds in Indonesia.

B. Method of Data Analysis

The data analysis method used is trend analysis of the variables tested, namely environmental quality. Trend analysis of closed questions aims to reveal students' tendencies towards environmental quality aspects.

III. RESULTS AND DISCUSSION

A. Description of the Physical Environment of the Study Room at Home During the Pandemic

TABLE I. DESCRIPTION OF ENVIRONMENTAL QUALITY ASPECTS

Component	Aspects	Indicator	%	Mean %	Description
Fixed	Noise	Comfortable Hearing	63.51	63.40	pretty good
	size	Activity support needs	69.37		
	flexibility	Supporting activities in the social environment	67.79		
	View	Beauty builds atmosphere	52.93		
Semi-fixed	Lighting	Lighting needs in the room	75.29	68.38	pretty good
	Temperature	Thermal comfort perception	67.68		
	Furniture	Supporting furniture needs	62.16		
Non-Fixed	Neatness and smells	The condition of the study room in building an atmosphere	87.95	69.46	pretty good
	Colour	Visual comfort	75.00		
	Stimulant sound	Nature sounds/music enhance the atmosphere for learning	77.82		
	Marker	Emotional support	52.93		
	Natural Element	Build a natural atmosphere	53.60		
Environmental Quality			67.16%		Pretty good

Source: Arsitektur Lingkungan, dan Perilaku [16, p. 40]. Research data, 2021.

This study answers questions about the description of the architectural student learning environment regarding the description of the physical environment in the study room. In addition, it was also found that non-fixed aspects such as neatness and smells were described by respondents as the elements described as having the most impact on their activities in their study room.

Based on the results of the questionnaire regarding environmental quality and descriptive analysis, it resulted in a perception level of 67.16% so that it was found interpretation that students had a pretty good description of the quality of the learning environment. although the three-component groups received fairly good perceptions from respondents, from the table above it can be seen that non-fixed elements got the highest perception score of 69.46%, (semi-fixed) such as lighting, temperature, furniture and, components get a score of 63.38% and, fixed components get the lowest perception score of 63.30%. This shows that the respondent's level of perception could be caused by the respondent's ability to control the physical elements, in this case also concerns the control ability of a child in his role in the dwelling.

B. Perception of the Quality of the Learning Environment at Home in Supporting Online Learning During the Pandemic

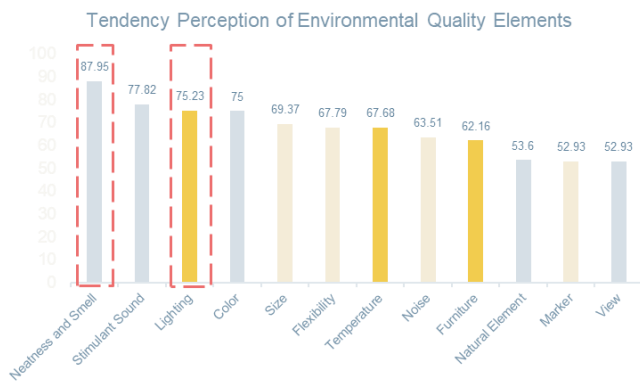


Fig. 2. Diagram of environmental quality perception level. Source: Research data, 2021.

Based on the results of the data analysis above the aspect of neatness and aroma has the highest level of perception of achievement with a perception level of 87.95% with a Very Good interpretation and aspects of markers and scenery have the lowest percentage of respondents' perception achievement level, namely 52.93% with a somewhat poor interpretation.

This architectural impression is in line with several previous studies which stated that Environmental lighting is very important to determine the welfare and productivity of users. Illumination is not only about electric light but also consists of direct natural light, indirect natural light, and indirect artificial light and reflected light, as well as control of all light sources [17]. Neatness and smell have an impact on one's emotions such as boredom, motivation, and engagement [18]. children show that smells are easily associated with emotions and thus can influence behavior [19].

In addition, findings related to lighting aspects. The Government of the Republic of Indonesia has issued a lighting standard SNI 03-6197-2000 for spaces in residences based on their function where for a study room in a residence ideally it has a lighting level of 120-250 lux with a color temperature for

Cool white at a level of 3300k-5300k and for Daylight more bigger than 5300k [20].

C. Perception of Environmental Quality Based on Demographic

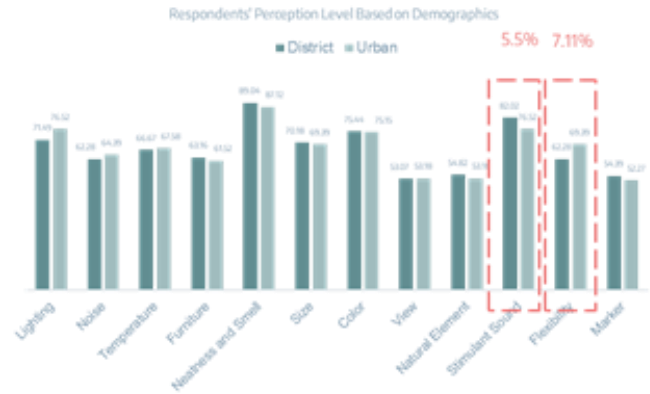


Fig. 3. Perception diagram based on demographics. Source: Research data, 2021.

Based on the results of the analysis of the table above, it is interpreted that there is a perception trend based on the demographic background of the respondents where the flexibility aspect for the urban demographic background has a range of respondents' perception level results in the aspect of flexibility resulting in an output of 7.11% perception of achievement level with respondents living in districts. In addition, respondents from district backgrounds have a higher level of perception of achievement in the stimulant sound aspect which produces a score range of 5.5% so that an analysis can be drawn about the tendency of flexibility in urban dwellings and stimulant sounds in district dwellings.

The results of the analysis on the aspect of flexibility in urban respondents, it explains the need for flexibility in urban communities can be met by accommodating the mass housing space [21] and open spaces in urban areas that are used as places for social interaction and public discussion [22]. In addition, the government of the Republic of Indonesia has regulated the implementation of housing and residential areas in Government Regulation Number 14 of 2016 concerning the need for an ideal residential environment in urban areas [23].

This finding of spatial needs is also in line with that reported by the World Bank where Indonesia is one of the largest contributors to urbanization in the world. According to United Nations data, Indonesia's urban population grew by nearly 59 million from 2010 to 2018, after China and India. Currently, 137 million people live in cities in Indonesia, or 54 percent of the population. By 2025, this figure is expected to increase to 68 percent of the population. Due to persistent infrastructure gaps and little attention being paid to spatial priorities in infrastructure investment, Indonesia has not yet fully benefited from the positive impacts of urbanization.

In the findings on Natural elements, district respondents explained that natural sounds such as the sound of birds, waves, wind, running water can be used as health therapy, namely increasing relaxation, improving physical and psychological conditions for individuals [24]. The use of music will help increase children's joy in learning. No less important is learning through music and or learning with music, as well as learning about music can provide many benefits for both the physical and mental development of students. Through music, children can learn a lot [25].

D. Perception of Environmental Quality Level Based on Gender

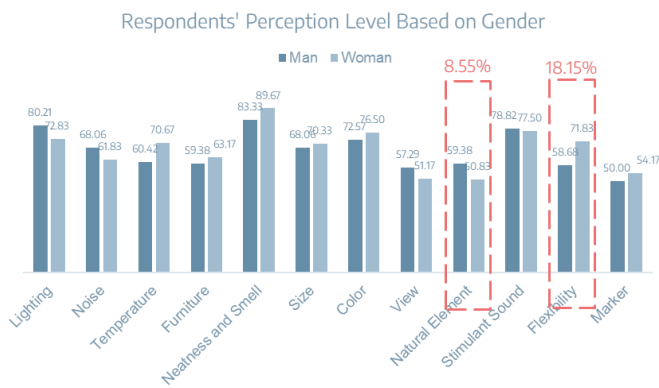


Fig. 4. Diagram of environmental quality perception by gender. Source: Research data, 2021.

The results of this analysis of perceptions based on gender indicate that the level of respondents' perceptions may be caused by the nature, roles, and positions of women and men which are socially and culturally constructed or shaped by society, influenced by belief systems/religion, culture, politics, and economic system. This context may change depending on the context of a particular situation, region, and culture. Refer to the USAID (United States Agency for International Development) report on achieving gender equality [26].

The architectural impression of this finding is in line with research which revealed that Women reported interacting more with family members and had a greater role in gender schematization in the dwelling than men [27]. The need for women's flexibility, especially a mother in housing, often finds discrimination and affects their productivity [28].

In the aspect of natural elements, Showing that bringing nature into your home can significantly help with stress relief [29]. In addition, this finding explains interesting findings where during the Covid 19 pandemic, it showed new trend habits in society by presenting natural elements in housing, it could be by keeping pets or by keeping ornamental plants at home.

IV. CONCLUSION

The description of the architectural student learning environment while studying from home during the pandemic has a pretty good description with a perception rate of 67.16%. In providing support for learning from home during the pandemic, it can be improved on non-fixed elements in the form of neatness and aroma aspects (87.95%) and semi-fixed elements in the form of lighting. (75.23%) In this study, respondents who live in urban areas tend to need the aspect of flexibility of the perception range of 7.11% and district respondents tend to perceive the sound aspect of the stimulant perception range of 5.5%. Female respondents have a tendency to aspects of flexibility in housing, the perception score range is 18.15% and male respondents have a higher tendency in natural elements, the perception score range is 8.55%.

This research contributes to the important contribution of the non-fixed component in the form of cleanliness. In addition, the semi-fixed component in the form of lighting can be increased so that it contributes to the child's learning process at home. The findings on the demographic and gender aspects in this study resulted in a contribution to the need for space elements in the dwelling. So that according to researchers it can contribute to improving the quality of the environment in the future.

The findings underscore the need to increase the semi-fixed and non-fixed components in enhancing the learning experience at home. Because the findings in this study can be used as a reference in improving the quality of children's learning environment in the future. Findings on the demographic and gender aspects can increase awareness regarding the need for housing in urban areas and the relaxing sound of stimulants in district dwellings. And realizing that there is a need for the role of women in the house and the need for natural elements in men as a form of reducing stress during a pandemic. And this study also suggests in the space design process not to forget the aspect of user's spatial comfort to support their activities.

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