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Physical Comfort of Student's Study Room

Febry Maharlika

Febry.maharlika@email.unikom.ac.id

Interior Design Department, Faculty of Desain, Universitas Komputer Indonesia

Bandung, Indonesia

Abstract. This study aims to describe the condition of the study room for Interior Design students at the Indonesian Computer University in terms of the physical comfort of the room. The COVID-19 pandemic has more or less had an impact on the world of education, especially on teaching and learning activities. Teaching and learning activities that are usually carried out face-to-face are now carried out online through video conferencing applications provided by several platforms. The change in the method of teaching and learning activities has caused a change in classrooms, which previously were facilitated by universities with the comfort of a conducive room, now students take part in teaching and learning activities in rooms that are individually conditioned. The method used is a quantitative method. Quantitative data was obtained from the distribution of questionnaires to students of the Unikom Interior Design Study Program from the 2018-2021 class as many as 65 students from a total of 177 students, then the data was processed using a Likert scale. From this research, data obtained that all aspects of the comfort of the physical space of the Interior Design Study Program students at sufficient intervals.

Keywords: effectiveness, online class, physical comfort of the room

1. Introduction

The Covid-19 pandemic, which has been going on since 2019 until now, has changed several formal learning methods in Indonesia, including in universities. With the government's decision regarding the Enforcement of Restrictions on Community Activities (PPKM), teaching and learning activities must be carried out online (online). This certainly changes the teaching and learning system, usually teaching and learning activities are carried out face-to-face in class, now it is done via video conference at their respective residences. Teaching and learning activities are one of the efforts to educate students so that they can develop their potential in order to be useful for themselves, society, nation and state. Therefore, effective and meaningful learning must be realized. Effective and meaningful learning can be realized by

creating an active and conducive learning atmosphere, so that students are excited during the learning process and get satisfactory results. According to Rohani [1] one of the important influences in the learning process is the physical environment. The physical environment in the classroom must pay attention to adequate ventilation, temperature and light [2].

A comfortable physical environment is needed in the teaching and learning process. Physical comfort can be interpreted as a condition where a person feels comfortable with the surrounding environment [3]. There are various direct and indirect mechanisms that affect comfort, such as outdoor conditions, gender, age, clothing, schedule or activity level, as well as control over air movement, ventilation, and local temperature [4]. In interior design science there are several criteria for physical comfort of space including spatial comfort, thermal comfort, audial comfort, and visual comfort [5]. These criteria are being met by universities in order to create conducive classrooms so that the effectiveness of teaching and learning activities can be met, including in the Unikom Interior Design Study Program. However, due to the COVID-19 pandemic, student learning activities, which are usually carried out in the classroom, are now carried out in their respective homes with the physical condition of privately available study rooms. This is what motivated the author to raise this topic, so that it can be seen that the effectiveness of online learning activities for students of the Unikom Interior Design Study Program is related to the physical comfort of students' study rooms while participating in online learning activities.

In this study, the author uses the criteria for the physical comfort of the room as a parameter to measure the physical comfort of the study room of students who take online lectures at the Unikom Interior Design Study Program. This study aims to determine the condition of the physical comfort of the study room of each student who participates in online learning with student respondents from the 2018-2021 class who are active in the Unikom Interior Design Study Program.

Research that examines the physical comfort of the room has been carried out by several authors including [1] a study entitled "The Effect of Physical Environment Comfort in Class III Inpatient Rooms on Patient Satisfaction at RSUI Kustati Surakarta" [6] This study examines the effect of physical comfort in the room environment on patient satisfaction. at RSUI Kustati Surakarta by performing statistical tests. The study measured patient satisfaction related to the physical comfort of the room in the form of room air conditioning, room noise, and room lighting. There are similarities in the parameters of the physical comfort of the space used in this study, but in this study, the authors also discuss spatial comfort in space. In addition, the case studies and the objects in the research are different. [2] The Effectiveness of Classroom Arrangement on Social Studies Learning Outcomes of Class III Students at SDN Gugus I Selaparang Subdistrict for the 2018/2019 Academic Year [1], this study discusses the effectiveness of classroom arrangement related to the configuration/layout of tables and chairs in the classroom. This research contributes to this research by providing an overview of the processing of the quantitative data obtained. This research has the same topic, namely the effectiveness of the study room, but the object of research is different from the object of research that the author examines.

2. Research methods

This study uses quantitative research methods. Quantitative methods are methods for studying certain theories by examining the relationship between variables measured by research instruments, so that data consisting of numbers can be analyzed based on statistical procedures [7]. While the research design used in this study is a survey research design. According to Fowler [7] survey research design seeks to describe quantitative descriptions or numerical descriptions of tendencies, attitudes or opinions of a particular population by examining a sample of that population. In this study, the numerical description in question is the result of a questionnaire distributed to students of the Unikom Interior Design Study Program, regarding the fulfillment of the criteria for the physical comfort of space in each student's study room. After the data was obtained, the data was analyzed using a Likert scale. Likert scale is Likert Scale is a research scale used to measure attitudes and opinions. With this Likert scale, respondents are asked to

complete a questionnaire that requires them to indicate their level of agreement with a series of questions [8]. The formula used is the Index Formula % = Total Score / Y x 100.

3. Results and Discussion

1. Physical Comfort of Space

Respondents in this study were students who were active in the Unikom Interior Design Study Program from the 2018-2021 class with the number of active students as many as 177 students. Of the total number of active students in the interior design study program, as many as 65 students or as many as 35% of respondents filled out this questionnaire, so the results of this questionnaire can be said to be valid. In this study, the parameters of the physical comfort of the room are based on 4 categories, namely spatial comfort, audial comfort, thermal comfort and visual comfort. Respondents were faced with a question through a google form that was distributed. Quantitative data processing is needed to process student questionnaire results, as described above. Respondents were given 8 questions that lead to the criteria for the physical comfort of the room, with 5 choices that must be chosen according to the condition of the student study room in their respective residences. These choices are the data obtained for further calculations, which are as follows: Strongly Agree (SS) has 5 points, (blue in the diagram), Agree (S) has 4 points (indigo color in the diagram), Neutral (N) has 3 points (yellow in the diagram) This blind option is usually chosen when the respondent is unsure which choice to choose, Disagree (TS) has 2 points (green in the diagram) and Strongly Disagree has 1 point (purple). With intercal assessment:

- Number 0% – 19.99% = Very (disagree/bad/very less)
- Figures 20% – 39.99% = Disagree / Not good)
- Figures 40% – 59.99% = Fair / Neutral
- Number 60% – 79.99% = (Agree/Good/Like)
- Score 80% – 100% = Very (agree/Good/Like)

1. Spatial comfort

Spatial comfort consists of two aspects, namely the density of space and ergonomics. The density of space in this study is the study room used by students. Spatial conditions are a consideration that is quite taken into account in space, even a comfortable room depends largely on its spatial conditions [9]. In determining the ideal study area, the DIKTI standard is used, which is 2m2/person for the study area. While ergonomics data is data concerning the physical size and the human body. In this study, the ergonomics standard used is ergonomics data from the Human Dimension book from Julius Panero in the form of standard sizes of furniture for study tables and chairs. The research questions are:

A. Your study room when studying online is at least 2 square meters in size

B. The furniture in your study room when attending online lectures is ergonomic: (1). study table : table width 76.2–91.4 cm, table length 152.4–182.9cm, table height 73.7–76.2 cm (2). Study chair: seat height 35.6–50.8 cm

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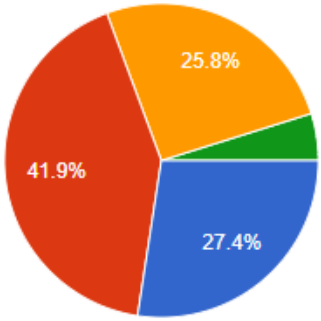
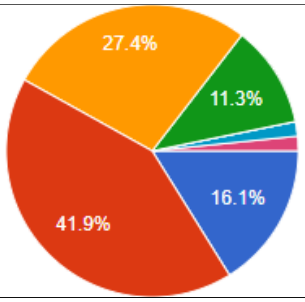
A. From the results of the collected questionnaires, as many as 1. 27.7 respondents Strongly Agree 2. 41.5 respondents Agree 3. 26.2 respondents Neutral 4. 4.9% of respondents Disagree	

Processing of data from the Likert scale:
1. 18 respondents strongly agree: 18 x 5 points = 90
2. 27 respondents agree: 27 x 4 points = 108
3. 17 neutral responses : 17 x 3 points = 51
4. 3 respondents disagree: 3 x 2 points = 6

The grand total is 255 , so 255/500x100 = 51%

Conclusion: enough

B. From the results of the collected questionnaires, as many as 1. 16.1% Strongly Agree 2. 41.9% Agree 3. 27.4% Neutral 4. 11.3% Disagree 5. 1.65% Strongly disagree 1.65% disallowed	

Processing of data from the Likert scale:
1. 10 respondents strongly agree: 10 x 5 points = 50
2. 27 respondents agree: 27 x 4 points = 108
3. 19 neutral responses : 19 x 3 points = 57
4. 7 respondents disagree: 7 x 2 points = 14
5. 2 respondents are analyzed: 2 x0 = 0

The grand total is 229 , so 229/500x100 = 45.8%

Conclusion: enough

1. Audial Comfort

Audial comfort In accordance with SNI (1993) in the scope of audial comfort, it is stated that a comfortable sound to be heard in residential areas (environments where online learning takes place) and schools is 40-45 dB [5]. The importance of good acoustic conditions during the learning process strongly supports speech communication, as well as concentrated work [10]. The research question is

A. When conducting online lectures, the audial conditions around your environment range from 40-45dB.

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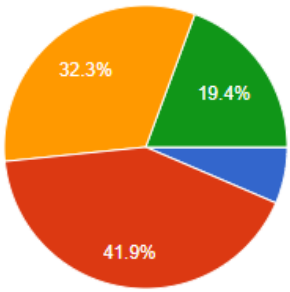
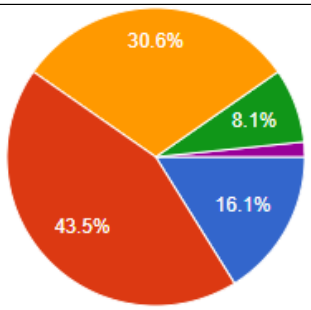
A. From the results of the collected questionnaires, as many as 1. 6.4% Strongly Agree 2. 41.9% Agree 3. 32.3% Neutral 4. 19.4% Disagree	

Processing of data from the Likert scale:
1. 4 respondents strongly agree: 4 x 5 points = 20
2. 27 respondents agree: 27 x 4 points = 108
3. 22 neutral responses: 22 x 3 points = 66
4. 12 respondents disagree: 12 x 2 points = 24
The grand total is 218 , so 218/500x100 = 43.6%
Conclusion: enough

1. Thermal Comfort

Thermal comfort is a state of mind that expresses satisfaction with the thermal environment (British Standard BS EN ISO 7730) [5]. According to Singh, temperature is also very influential on user comfort while working [11]. In this study, the standard of thermal comfort is used between the effective temperature of 22.8 0C-25.8 0C TE. The research questions are:
A. When doing online lectures, your room's effective temperature is between 22.8 0C ~ 25.8 0C

A. From the results of the collected questionnaires, as many as 1. 16.1% Strongly Agree 2. 43.5% Agree 3. 30.6% Neutral 4. 8.1% Disagree 5. 1.7% Strongly Disagree	

Processing of data from the Likert scale:
1.10 respondents strongly agree: 10 x 5 points = 50
2. 29 respondents agree: 29 x 4 points = 116
3. 20 neutral responses : 20 x 3 points = 60
4. 5 respondents disagree: 5 x 2 points = 10
5. 1 respondent strongly disagrees : 1 x 1 point = 1
The total is , then 237/500x100 = 47.4%
Conclusion: enough

1. Visual Comfort

Visual comfort is a condition where a person feels comfortable with his visual environment. Visual comfort relates to the level of ambient lighting. In this study, the standards used in achieving visual comfort are: uniformity of lighting from the intensity and color of the room, lighting luminance, no glare, adequate contrast conditions. The research question is
A. When doing online lectures, the lighting around you is uniform in intensity and color
B. When doing online lectures, the illumination is optimal
C. When doing online lectures, the lighting in your study room is not bright

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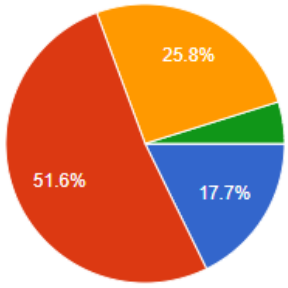
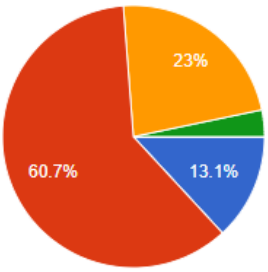
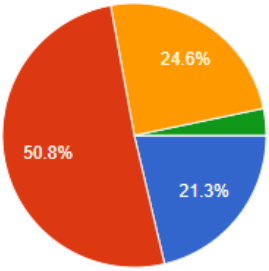
D. When doing online lectures, the contrast conditions (paint color, lighting) in your room are balanced

A. From the results of the collected questionnaires, as many as 1. 17.7% Strongly Agree 2. 51.6% Agree 3. 25.8% Neutral 4.9% Disagree	

Processing of data from the Likert scale:
1. 11 respondents strongly agree: 11 x 5 points = 55
2. 34 respondents agree: 34x 4 points = 136
3. 17 neutral respondents : 17 x 3 points = 51
4. 3 respondents disagree: 3 x 2 points = 6
The total is , then 248/500x100 = 49.6%
Conclusion: enough

A. From the results of the collected questionnaires, as many as 1. 13.1% Strongly Agree 2. 60.7% Agree 3. 23% Neutral 3.3% Disagree	

Processing of data from the Likert scale:
1. 8 respondents strongly agree: 8 x 5 points = 40
2. 39 respondents agree: 39 x 4 points = 156
3. 15 neutral respondents : 15 x 3 points = 45
4. 2 respondents disagree: 2 x 2 points = 4
The total is , then 245/500x100 = 49%
Conclusion: enough

A. From the results of the collected questionnaires, as many as 1. 21.3% Strongly Agree 2. 50.8% Agree 3. 24.6% Neutral 4. 3% Disagree	

Processing of data from the Likert scale:
1. 14 respondents strongly agree: 14 x 5 points = 70
2. 33 respondents agree: 39 x 4 points = 156
3. 15 neutral respondents : 15 x 3 points = 45

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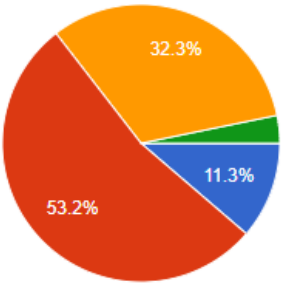
4. 2 respondents disagree: 2 x 2 points = 4
The total is , then 275/500x100 = 55%
Conclusion: enough

A. From the results of the collected questionnaires, as many as 1. 11.3% Strongly Agree 2. 53.2% Agree 3. 32.3% Neutral 4. 2% Disagree	

Processing of data from the Likert scale:
1. 8 respondents strongly agree: 8 x 5 points = 40
2. 33 respondents agree: 33 x 4 points = 132
3. 22 neutral respondents: 22 x 3 points = 66
4. 2 respondents disagree: 2 x 2 points = 4
The total is , then 242/500x100 = 48.4%
Conclusion: enough

Conclusion

Based on a survey conducted on respondents, the conclusions were drawn: The level of physical comfort of the room in the student's private study room in the 2018-2021 Interior Design Program is sufficient with data

1. A. The level of spatial comfort for the density of space is sufficient
   B.The level of spatial comfort for ergonomics is sufficient
2. The level of audial comfort is adequate
3. Thermal comfort level is sufficient
4. A.Comfort level uniformity of lighting is sufficient
   B. The comfort level of the intensity and color of the space is sufficient
   C.The level of comfort of the illumination illumination is sufficient
   D. The comfort level of contrast conditions is sufficient

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