Reading space characteristics in campus environment

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Abstract. Reading activity is a part of daily learning activities that are usually done by college students and takes place in the facilities that are provided by the campus. However, students tend to have a perception of a particular location that is considered appropriate with the activities undertaken. This study identified students’ perceptions of reading space characteristics in campus environment which are considered able to accommodate reading activity. Exploratory qualitative research methods were used to collect data from selected types of space and the reasons for the students in choosing the specific space to do their reading. The results showed that students do not only use library facilities as a support unit of academic activities. This study found that students tend to use some places with non-library function, such as students’ union room, hallway, and classroom. Students perceive reading space by its physical and social characteristics. The physical consist of ambiance, quiet place, tranquility, availability of facilities, the level of coolness, lighting, location accessibility, connection with nature, convenience furniture, air quality, aesthetics, the flexibility of activities, the crowd of place, the level of shade, outdoor, ownership, and indoor. While the social characteristics of the reading space are to have privacy, favorable reading position, and the presence of others.

1. Introduction

Campus environment has a variety of places and facilities that aim to accommodate student-learning activities. Both individual and collaborative can do learning activities. Reading is one way to learn. In carrying out reading activities, students can use the spaces and facilities that exist and provided by the college. Tampubolon et al. [1] found that students rated campus and public space as a place that is less than ideal for reading because students’ ability to think and students’ reading attachment tend to be low. These findings suggested a further review of reading spaces preferences, particularly within the campus environment that support student needs.

Sommer [2, 3] identified students’ preferences and found that the learning activities not only happen in the library, but also includes residences, cafeterias, lounges, empty classrooms, specific laboratory, and even outdoor areas. The research used open-ended questions about why students choose a particular place and review the impact of doing the learning activities in such place. Among the findings, Sommer [3] argued that libraries need further research because they have a function and purpose to support the education. Sommer and Olsen [4] also discussed the further research probability for some design issues in the campus classrooms. Beckers et al. [5] found that canteen, cafe, reception area, corridor, presentation room, and personal room are spaces that support individual
learning activities within the campus environment. There is a possibility of another form of learning space that tends to be ideal and support the student-reading activities.

Regardless of the various studies about learning environment in higher education, there is still a lack of understanding about college student preferences [6]. Research on the preferences of the learning environment needs further studies [7], especially after seeing that current research has not yet to focus on the reading environment. The research on learning activities should not limit to the perspective of the education providers. Therefore, there is a need to do a different research that will involve students’ opinions on the learning environment [6]. Campus environments give students the freedom to choose a space to conduct reading activities and show the reasons for the selection. College students tend to have goals and characters, so they know more about what they want and need for their future.

Selecting a particular place to learn has a relationship with perceived quality of the physical and social characteristics [8]. The research identifying the reasons of the students in choosing the specifics space to read to obtain these characteristics [3]. Based on that, this study is expected to find the types of space within the campus environment that can be used to read based on student preferences. The study then identifies the characteristics of the chosen place by looking at the college students reasoning.

2. Method
This study used a qualitative research method [9]. Exploratory research [10] aimed to name the types of reading space in the campus environment based on student preferences and selections. This study also aimed to identify the characteristics according to students’ reasons in choosing that space. Respondents were in the same place and geographical condition, which is Institut Teknologi Bandung (ITB).

2.1. Data collection method
Data collection used an online and paper-based questionnaire. Researcher distributed the online questionnaires to ITB students on 20–23 February 2017 through a group chat of each study majors at ITB (purposive sampling). From the online questionnaire, the data obtained is of 58 respondents. Seeing the ineffectiveness of data collection through online questionnaire, researcher decided to continue the data collection by using a paper-based questionnaire on 24 February–3 March 2017. Researcher distributed the questionnaires freely to all students of each major in ITB during the active hour and day and success collected data from 313 respondents. Through data collection, the total is of 371 respondents consisting 192 (51.75%) male respondents and 179 (48.25%) female respondents.

The online and paper-based questionnaires contain open-ended questions. The questions aim to allow students to write the name of reading space in the campus environment based on their preferences and for them to give reasons in choosing. The results are qualitative text data.

2.2. Data analysis method
Qualitative data were analyzed using qualitative analysis method of content analysis and quantitative analysis method of distribution and correspondence analysis. This research used content analysis to find reading space types in the campus environment chosen by the students and the reasons behind their selection. The results of content analysis used distribution analysis to find the frequency of occurrence of the answers. Furthermore, selective coding using correspondence analysis will show the level of coincidence between the types of the selected reading space with the spatial characteristics that students tend to notice.

3. Results and Discussions
In the content analysis stage, researcher obtained the keywords from the text data by using an open coding. The quote from the questionnaire results below show an example of open coding of the type of the reading space in the campus environment that students choose.
“Laboratory at CAS Building.” (Respondent 9, Mathematics)

“University library, 4th floor, near the window.” (Respondent 56, Science and Information Technology)

“Inside the HMT union room.” (Respondent 114, Mining Engineering)

Based on the description, researcher obtained some keywords from the type of space that students choose, namely “laboratory”, “university library”, and “students’ union room”.

In the same way, researcher identified the reasons of students choose particular space in the campus environment for reading by using an open coding. The quote from the questionnaire results below show an example of open coding of their reasons.

“The atmosphere is comfortable, calm; the light is bright.” (Respondent 130, Petroleum Engineering)

“Quiet, fast Wi-Fi, cool air” (Respondent 143, Chemical Engineering)

“Near the lecture hall, there is the internet, electrical outlet.” (Respondent 235, Mechanical Engineering)

Based on the description, researcher obtained some keywords from the students’ reasons in choosing a space for reading. The keywords namely “comfortable”, “quiet”, “bright lighting”, “there is Wi-Fi”, “cool”, “near the lecture hall”, and “there is outlet”.

After the open coding stage, researcher made a group of keywords (axial coding) to construct a category. Through axial coding, there are 16 categories of reading space types in the campus environment. While there are 20 categories of space characteristics based on the students’ reasons for choosing that divided into physical and social. See table 1 and table 2 for an example of axial coding stage of the types of reading space and the reasons for choosing that place.

Table 1. Example axial coding of reading space types that selected by the student

| No | Keyword | Category               |
|----|---------|------------------------|
| 1  | Audiovisual room 4th floor | University library |
|    | Study area 1st floor         |                       |
|    | Study area 2nd floor         |                       |
|    | Study area 3rd floor         |                       |
|    | Glass room 3rd floor         |                       |
|    | Study area 4th floor         |                       |
|    | Study area any floor         |                       |
|    | American corner              |                       |
| 2  | Student lounge LABTEK II     | Student lounge        |
|    | Student lounge LABTEK X      |                       |
|    | Student lounge Department of Civil Engineering |                |
|    | Student lounge Department of Environmental Engineering |            |
|    | Campus Centre east wing      |                       |
Table 2. Example axial coding of the reason for choosing a particular reading space in the campus environment

| No | Keyword                          | Category   | Type of characteristic |
|----|----------------------------------|------------|------------------------|
| 1  | Comfortable                      | Ambiance   | Physical characteristic|
|    | Fun atmosphere                   |            |                        |
|    | Relax                            |            |                        |
|    | Mood awake                       |            |                        |
|    | Conducive                        |            |                        |
| 2  | No interruptions                 | Privacy    | Social characteristic  |
|    | Minim interaction                |            |                        |
|    | Not much people pass by          |            |                        |
|    | Can be aloof                     |            |                        |
|    | Private                          |            |                        |
|    | Women only                       |            |                        |

Researcher then analyzed the categorization results to obtain the frequency of answers from each category. The analysis used a histogram to show the emergence of the most dominant or non-dominant category.

See figure 1 that show distribution analysis results of the reading space types. For the selection of reading space, it is found that the students tend to choose the library which is a facility provided by the college as a place to learn and obtain information. The categories with library function consist of “university library” as many as 148 (38.74%) and “department library” as many as 50 (13.08%). Other than the type of space with library functions, there is the emergence of non-library places with a quite dominant number. There are “students’ union room” as much as 53 (13.87%), “hallway” as many as 41 (10.73%), “classroom” as many as 23 (6.02%), and “student lounge” as many as 21 (5.49%). There is also the emergence of outdoor space that is considered as a possible space for reading although the frequency of such answers is not dominant, e.g. “campus garden” as many as 7 (1.83%) and “court” as many as 3 (0.78%).

![Figure 1. Distribution analysis results of the reading space types](image-url)
At the university library, there is a wide selection of study areas on each floor of the building and resources in the form of physical and digital books. Researcher can find the same thing in the department’s library because students tend to obtain information more easily related to each of their majors. Researcher also grouped the results of the categorization of reading space based on the form of indoor and outdoor spaces and divided the indoor spaces by functions as libraries and non-libraries. These findings indicate that there are various types of reading rooms besides library space, both indoor and outdoor.

See figure 2 about distribution analysis results of the students’ reasons for choosing a particular reading space in the campus environment. Students tend to pay attention to the “ambiance” as many as 168 (20.79%), “quiet place” as many as 108 (13.36%), “tranquility” as many as 112 (13.86%), “availability of facilities” as many as 80 (9.90%), “level of coolness” as many as 75 (9.28%), and “lighting” as many as 53 (6.55%).

![Distribution analysis results of the reasons for choosing a particular reading space in the campus environment](image)

**Figure 2.** Distribution analysis results of the reasons for choosing a particular reading space in the campus environment

The impression of comfort, fun, and conditions conducive to reading relate to the ambiance of space. Students also see the numbers of the user that related to the achievement of a quiet place. The availability of facilities such as the presence of sockets, the internet, and reading materials affect the selection of reading space by students. The air temperature is also an important characteristic to note to fit the level of coolness that consider comfortable and appropriate for reading. These findings tend to be similar to the results of previous research by Tampubolon and Kusuma [11], which used open-ended questions about the reasons for choosing where to read in general case. The findings in this study will describe each characteristic of reading space more in-depth based on the keywords obtained. For example, the emergence of space lighting factors also becomes one of the dominant reasons. Lighting should be bright and suitable for reading. Tampubolon and Kusuma [11] found
privacy as one form of social characteristics. This research finds another social form, namely privacy, the presence of others, and favorable reading position.

The research analysis then continued with selective coding using correspondence analysis to determine the characteristics of space that tend to be considered by students in choosing the appropriate space for reading in the campus environment. See figure 3 that show correspondence relationship between selected reading space types and the characteristics using ward-hierarchical clustering.

Figure 3. Distribution analysis results of the reasons for choosing a particular reading space in the campus environment (P-Value <.0001)
Students who pick university library tend to assume that space can create a comfortable and enjoyable reading atmosphere (ambiance; f = 168). Beckers et al. [5] described comfort as a category that links to the achievement of lighting, air quality, temperature, acoustics, furniture, and color. University library study area is also considered capable of providing the appropriate level of tranquility (f = 112) used for reading. For the department library, students tend to see a quiet place for reading (f = 108). Barret et al. [12] found that good acoustics and external-internal noise have a significant correlation with the learning rate.

Besides library space, there is a non-library space selected based on particular characteristics. Students choose hallways because it provides the appropriate level of coolness (f = 75). The students assess the students’ union room to have an easy accessibility (f = 33). The student lounge is considered capable of providing supportive reading facilities (f = 80), a bright and appropriate lighting (f = 53), have a connection with nature (f = 29), and the availability of convenience tables and chairs (f = 24). Barret et al. [12] described that lighting has a significant impact on students learning outcomes. Yang et al. [13] described students’ appraisal also relies on facilities that are provided, such as information and communication technology (ICT). Classrooms are considered flexible in accommodating a variety of student reading activities (f = 13), and students tend to have an ownership (f = 5) to their classrooms. Students choose an empty room because it provides a clean and spacious place (f = 14).

In addition to indoor space, students also choose outdoor space for reading. Courts are selected because students can read while breathing fresh air and feel the presence of the breeze (air quality; f = 14). Barret et al. [12] described temperature and air quality has a significant impact on students learning outcomes. Garden also has trees that offer shade from the sun’s heat (f = 6). Campus garden is located between building (f = 2) and tends crowded by people (f = 7). Students also choose lobby, rooftop, and canteen that represent outdoor spaces (f = 6).

Students perceive the quality of space based on physical and social characteristics [8]. Students tend to choose places based on their physical characteristics. However, students also pick several places because their social characteristics. Students can easily find many friends and the whereabouts of others (presence of others; f = 15) in the balcony and laboratory. Students also find students’ clubs room for discussion because it is considered able to provide privacy to read because there are not many people passed by and with minimum disruption (f = 28). Students also feel more relaxed to determine favorable reading position, such as lying or leaning against the wall (f = 16). Harrop and Turpin [7] found that students choose a particular place because they know that their friends will come there. Appel-Meulenbroek et al. [14] described that students have a general preference for privacy to express the importance of individual space or a condition where none could see them working. Students also need to control the noise, temperature, or listening to their favorite songs.

4. Conclusion

There are various potential types of reading space within the campus environment, both inside and outside the building. Reading space inside the building divided based on function, namely the library and non-library. The student still tends to choose the library space, both the university library and the department library. It is because of the function is considered by the reading activities. However, this does not close the potential of non-library space and outdoor space as accommodating reading spaces.

Students have preferences in choosing a place for reading by looking at its physical and social characteristics. The ambiance, quiet place, tranquility, availability of facilities, the level of coolness, lighting, location accessibility, connection with nature, convenience furniture, air quality, aesthetics, the flexibility of activities, the crowd of place, the level of shade, outdoor, ownership, and indoor tend to indicate the physical characteristic. The privacy, favorable reading position, and the presence of others tend to suggest the social characteristics.

Students who view the physical characteristics tend to pick university library, students’ union room, department library, hallway, classroom, student lounge, campus garden, empty room, court, canteen, lobby, and rooftop. Students tend to select laboratory, students’ clubs room, discussion room, and balcony because of the social characteristics.
This research has advantages because the findings focus on reading activities in the campus environment. In preparing the concept of campus design, planner can consider the results of reading space types from this study as a part of programming. The results of the characteristics of reading space in this study tend to be more in-depth so it can be an additional consideration in preparing the concept of campus environment design that focus on students’ preferences. The correspondence relationship between the types of reading space with the characteristics shows students tendency in assessing the physical and social design aspects.

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