Student’s Perception on Pedestrian Path Comfort in Yogyakarta State University

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Abstract. Pedestrian path is an important element for outdoor activities in urban environment, as well as in campus area. Yogyakarta State University (YSU) is a campus which is still in progress to develop its physical environment, includes pedestrian areas. The research aims to study student’s perceptions in using pedestrian path in campus area, especially in comfort aspects (direct route, line safety, and line clarity). This study uses a descriptive qualitative method by giving questionnaires using google form application to students. As a result, it is concluded three comfort indicators of student’s perception on their campus pedestrian. First, the degree of achievement for experience indicators is 70.61%; it means that the experience indicators giving a good influence on the perceptions of YSU students. Second, the indicator of attraction is 80.85%, shows a very good influence on the perception of the students. Meanwhile, indicator of expectation is 76.86%, it means that the expectation indicator giving a pretty good influence on the perception of YSU students on the comfort of pedestrian.

Keywords: student perception, comfort, pedestrian path

1. Introduction
The increasing of urban inhabitant impacts on many problems in urban environment. It cannot be overcome with the regular approach. Green city development is a suitable approach to be implemented because of the innovativeness in city development. Green City is one of sustainable urban planning approaches which able to address urban area problems, as well as global climate change problem [1]. This approach is also known as an Ecological City or a Healthy City. This means that there is a balance between the growth and the development of the city with environmental sustainability. Green city can create a better condition of a city environment. Safe, comfortable, clean, and healthy environment can be achieved by optimizing the social economic potency of community and also by empowering community forum facilitated by relevant sector and synchronize with urban planning.

To make it happen, it takes effort from every individual of the community and all relevant parties. The concept of Green City is in accordance with the approaches to avoid the development of area that is not built. This emphasizes the need for plans for the development of new cities and cities that regards to local ecological conditions and minimize the detrimental effects of urban development, it should also ensure the development of city that can create local natural asset [2]. One of the 8 criterias that must be
fulfilled in Green City is Green Infrastructure. What is meant by green infrastructure is by providing pedestrian path and bicycle lane. Besides that, it is also carried out with orientation on pedestrian with a self-sufficiency environmental pattern, hence citizens can go shopping, having recreation, go to school, socialism on foot [3].

The population growth causes building growth and other interests related to human life. Moreover, its impact on the various other urban problems such as congestion, slum area, social inequality and less green open space. This condition is exacerbated by the the climate change that requires Yogyakarta city to make more appropriate planning for its territory related to these problems. Along with the problems that occur, follow up planning efforts with the Green City concept approach to overcome the problems that occur in the cities of Indonesia that have been proclaimed by the Government of Indonesia, in this case is the Ministry of Public Work and its array, Yogyakarta also begins to do planning activities with that concept.

To realize this thing, of course Yogyakarta city infiltrated one of the indicators in achieving the realization of the Green City, that is the procurement of pedestrian path to reduce the impact of the city's problem. Pedestrian path is also held given that the cities in Indonesia have begun to be overwhelmed by the penetration of motorized vehicles, which numbers have increased dramatically in every time. In addition, the presence of motorized vehicles has made it impossible to maintain the 15 minutes walking criteria. Because of this, Indonesia needs a plan that refers to Transit Oriented Development that requires pedestrian path facility to support it.

Walking is the most efficient transportation that can be done in campus area, [4] said that walking has advantage over other transportations, namely the low speed of pedestrian so it is can be advantage, then walking activities can be done while doing observation the environment around it. Pedestrian path that fulfills the comfort aspect should be the main facility that support activities in the central campus environment. The main aspects of comfort of the pedestrian path include direct route, security, and clarity. The purpose of this study is to examine how the perception of YSU students towards the comfort of pedestrian pathways in YSU campus environment. The fulfillment of the primary aspect includes direct route, line safety and clear path in YSU campus environment.

Pedestrian path is a path that is provided for pedestrian to provide service to pedestrian so it can improve the smoothness, safety, and comfort of pedestrian. Pedestrian is one of the road users who has the right to use the road. For this reason, road network needs to be provided for pedestrian. The pedestrian path which is a path intended for walking, it can be a pathway [5]. The term pedestrian originates from Latin pedestal pedantries, namely people who walk or pedestrians. Pedestrian also comes from the Greek word pesos which means feet so that pedestrian can be interpreted as pedestrian or walker. Pedestrian is also interpreted as movement or circulation or the movement of people or people from one place to the origin to another place as a destination going on foot [6].

Pedestrian pathway must be considered as one of the city designs. Pedestrian path is a part of the city where people move with their feet, usually along the side of the road [7]. The function of the pedestrian path is for the safety of pedestrian when they move from one place to another. One function of the pedestrian path is to shorten the travel time to reach a destination as close as possible, safe from other traffics and smoothly without obstacles. Circulation that occurs within the campus area with so many campus users must be well accommodated, of course it requires an area that functions as a public area and can be used as a place to socialize. This public area can then be used as an area for circulation, so that in the end this public area is known as a pedestrian area or area to facilitate pedestrian on campus. The level of comfort of pedestrian in doing walking activities can be achieved if the pedestrian path is smooth and free of obstacle, besides the pedestrian path must be wide in order to accommodate pedestrian traffic from two directions. As for supporting the comfort of pedestrian on the pedestrian path there must be facilities on pedestrian path.

2. Method
This research uses quantitative descriptive data analysis. Qualitative descriptive research is used to describe and answer the problem of a current phenomenon or event, both phenomena in a single variable or correlation and or comparison of various variables.

Data is collected by questionnaire containing closed question. Since in this study the subject is less than 100, it is better to take it all so that the research is population research. The sample in this study is 47 samples.

3. Results and Discussion

3.1. Experience Indicator

The perceptions of YSU student on pedestrian pathway in YSU environment for experience indicators is obtained through research questionnaire that is outlined through 4 statements. Respondents who filled out this research questionnaire are 47 respondents. The statements on experience sub indicators are as follow:

a) Do you know / understand about pedestrian path?
Based on the percentage of response of the students' response the statement "I know / understand about pedestrian path" it can be seen from the number and percentage of respondents who stated that they really understand and understood more (93.40%) than those who stated that they do not understand and less understand (6.50 %). This means that there are still 3 respondents who feel they don't understand or don't understand the pedestrian path.

b) Do you feel safe and comfortable walking on the pedestrian path in YSU campus environment?
Based on the percentage of student responses to the statement "feeling safe and comfortable walking on the pedestrian path in YSU campus environment" it can be seen from the number and percentage of respondents who say they feel very safe and comfortable walking on the pedestrian path in YSU campus environment (63.00%) than those who state that they feel unsafe and comfortable walking on the pedestrian path in YSU campus environment (37.00%). This means that there are still 18 respondents who claim to feel insecure and comfortable walking on the pedestrian path in YSU campus environment.

c) Is the pedestrian path in the YSU campus comfortable for two people to walk?
Based on the percentage of response of the students' response to the statement "pedestrian path in YSU campus area is comfortable for two people to walk" it can be seen from the number and percentage of respondent who state that the pedestrian path in YSU campus environment is very comfortable for more than two people (13.00% ) than those who state that the pedestrian paths in the YSU campus environment is uncomfortable for more than two people (87.00%). This means that there are still 41 respondents who feel the pedestrian path in YSU campus environment is very uncomfortable for more than two people to walk.

3.2. Interest Indicator

The perception of YSU student on pedestrian path in YSU environment for interest indicator is obtained by doing research questionnaire that is outlined through 7 point of statements. Respondents who fill out this research questionnaire are 47 respondents. The statements on the sub interest indicator are as follow:

a) How is the condition of the pedestrian path you pass?
Based on the percentage of student response to the statement "I know / understand the condition of the pedestrian path that I pass" it can be seen from the number and percentage of respondents who state that the condition of the pedestrian path in YSU campus environment is very good and better (76.10%) than who state that it is not good and very bad (23.90%). This means that there are still 11 respondents who state that the condition of the pedestrian path in YSU campus environment is very good and better (76.10%) than who state that it is not good and very bad (23.90%). This means that there are still 11 respondents who state that the condition of the pedestrian path in YSU campus environment is not good and very bad.

b) How is the condition of pedestrian facility in YSU campus?
Based on the percentage of student response to the statement "I know / understand the conditions of the pedestrian facilities that I pass" it can be seen from the number and percentage of respondents who state that the condition of the pedestrian facility in YSU campus environment is very good and good (71.70
%) than who state that it is not good and very bad (23.90%). This means that there are still 14 respondents who state that the condition of pedestrian facility in YSU campus is not good and very bad.

b) What about the width of pedestrian path in YSU campus?

Based on the percentage of student responses to the statement "The condition of the width of pedestrian path in YSU campus" it can be seen from the number and percentage of respondents who state that the width of the pedestrian path in YSU campus is very good and good (47.80%) than who state that the width of the pedestrian path in YSU campus is not good and very bad (52.20%). This means that there are still 25 respondents who feel that the width of the pedestrian path in YSU campus is not wide enough to pass.

c) Is the pedestrian path in YSU campus safe and comfortable when in rainy and hot weather?

Based on the percentage of response of students' responses to the statement "What about the width of pedestrian path in YSU campus?" it can be seen from the number and percentage of respondents who state that the condition of the pedestrian path in YSU campus is very good during rainy and hot weather (47.80%) than those state that the condition of the pedestrian path in YSU campus is not very good in the rainy and hot weather. (52.20%). This means that there are still 31 respondents who feel the condition of the pedestrian path in YSU campus is not very good in rainy and hot weather.

d) Have you ever used a pedestrian path at night?

Based on the percentage of response of students' responses to the statement "I use pedestrian path at night" it can be seen from the number and percentage of respondents who say they never and ever use pedestrian path at night (47.80%) than those who rarely and always use the pedestrian path at night (52.20%). This means that there are still 8 respondents who use pedestrian path at night.

e) How is condition for street lighting on pedestrian path in YSU campus environment?

Based on the percentage of answer to student responses to the statement "What about the width of pedestrian path in YSU campus?" it can be seen from the number and percentage of respondents who state the condition of the street lighting in the pedestrian path in YSU campus is very good and good (38.60%) than those who state that the condition of the street lighting on the pedestrian path in YSU campus is not good and very bad (61.40%). This means that there are still 30 respondents who state that the condition of the street lighting on the pedestrian path in YSU campus is not good.

f) Does the pedestrian path in YSU campus need to be improved?

Based on the percentage of response of students' responses to the statement "does the pedestrian pathway in YSU campus environment need to be improved" it can be seen from the number and percentage of respondents who state that the pedestrian path in YSU campus needs to be repaired (97.80%) rather than who state that the pedestrian pathway in YSU campus environment does not need to be improved (2.20%). This means that there are still 2 respondents who state that the pedestrian path in YSU campus environment does not need to be repaired.

### 3.3. Expectation Indicator

The perception of YSU student on pedestrian pathway in YSU environment for expectation indicator is obtained through research questionnaire that is outlined through 4 statements. The number of respondents who filled out this research questionnaire is 47. The statements on the expectation indicator are as follows:

a) Are trash bin, bench and pedestrian protection important elements needed on the pedestrian path?

Based on the response percentage of students' response to the statement "the presence or absence of trash bin, bench and pedestrian protection as an important element in pedestrian path" it can be seen from the number and percentage of respondent who state that there is a necessity for trash bin, bench and pedestrian protection as important elements in the pedestrian path (97.90%) than those who state that there is no necessity for trash bin, bench and pedestrian protection as important elements in the pedestrian path (2.20%). This means that there are still 2 respondents who feel they do not need trash bin, bench and pedestrian protection as important elements in the pedestrian path.

b) Is counseling about pedestrian path needed for YSU student?
Based on the percentage of response of the students' responses to the statement "counseling about pedestrian path needed for YSU students" it can be seen from the number and percentage of respondents who say that counseling about pedestrian pathways is very necessary for YSU student (84.80%) than those who state that counseling about pedestrian path is not necessary for YSU students (15.20%). This means that there are still 7 respondents who feel that counseling about pedestrian path is not necessary for YSU student.

c) Can the pedestrian path in YSU campus environment be categorized as a part of the Green Campus?

Based on the percentage of student response to the statement "the pedestrian path in YSU campus environment can be categorized as a part of the Green Campus" it can be seen from the number and percentage of respondents stating that the pedestrian path in YSU campus can be categorized as a part of the Green Campus (76.10%) than those who state that the pedestrian path in YSU campus cannot be categorized as a part of the Green Campus (23.90%). This means that there are still 12 respondents who feel that the pedestrian path in YSU campus cannot be categorized as part of Green Campus.

4. Recapitulation of YSU Student Perception of Pedestrian Path Comfort in YSU Campus Environment

4.1. Experience Indicator

Table 1. Discussion of experience indicator.

| Item Number | 1  | 2  | 3  | 4  | Total Score | Degree of Achievement Per Sub Indicator |
|-------------|----|----|----|----|-------------|----------------------------------------|
|             | F %| F %| F %| F %|             |                                        |
| 1           | 0  | 39.1 | 3 | 54.3 | 26 | 6.5 | 18 | 0.0 | 156 | 70.61% |
| 2           | 0  | 39.1 | 2 | 58.7 | 27 | 2.2 | 18 | 0.0 | 157 |
| 3           | 2  | 2.2  | 16 | 60.8 | 27 | 34.8 | 2 | 2.2 | 123 |
| 4           | 5  | 0.0  | 36 | 13.0 | 6 | 78.3 | 0 | 8.7 | 95  |

\[ DP = \frac{\sum \text{highest scale item}}{n \times 100\%} \]

\[ DP = \frac{156 + 157 + 123 + 95}{47 \times 4 \times 4} \times 100\% \]

\[ DP = \frac{531}{752} \times 100\% = 70.61\% \]

Based on the above data it can be seen that the degree of achievement number for experience indicator is 70.61%. This means that experience indicator provides a pretty good influence on the perception of YSU student on the comfort of YSU pedestrian path.

4.2. Interest Indicator

Table 2. Discussion of interest indicator.

| Item Number | 1  | 2  | 3  | 4  | Total Score | Degree of Achievement Per Sub Indicator |
|-------------|----|----|----|----|-------------|----------------------------------------|
|             | F %| F %| F %| F %|             |                                        |
| 1           | 0  | 0.0 | 11 | 23.9 | 34 | 73.9 | 2 | 2.2 | 132 | 80.85% |
| 2           | 2  | 2.2 | 12 | 26.1 | 29 | 63.0 | 4 | 8.7 | 129 |
Based on the data above, it can be seen that the degree of achievement number for interest indicator is 80.85%. This means that the interest indicator has a pretty good influence on the perception of YSU student on the comfort of pedestrian path in YSU campus environment.

4.3. Expectation Indicator

Based on the data above, it can be seen that the degree of achievement number for expectation indicator is 76.86%. This means that the expectation indicator has a pretty good influence on the perception of YSU student on the comfort of pedestrian path in YSU campus environment.

5. Conclusion

There are three comfort indicators of student’s perception on their campus pedestrian paths. First, the degree of achievement for experience indicators is 70.61%; it means that the experience indicators giving a good influence on the perceptions of YSU students. Second, the indicator of attraction is 80.85%, shows a very good influence on the perception of the students. Third, indicator of expectation is 76.86%; it means that the expectation indicator giving a pretty good influence on the perception of YSU students on the comfort of pedestrian. As an average, it is concluded that all
indicators achieve 76.10%. It means that most students have good perception on campus pedestrian, but it should be developed to get a better and more comfortable condition.

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