



## The Effectiveness of Playgrounds through Vegetated-Setting Approach in Tembalang, Indonesia

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**Abstract.** As part of urban public space, playgrounds are a children's play space that can improve children's sensory, communication, and physical abilities. Playgrounds must be able to create comfort and education for children to engage with nature. One of the approaches to achieve is by the vegetated setting. Tembalang is a sub-district in Semarang, with children dominating 44% of the total population. Therefore, the playground's effectiveness in Tembalang was assessed based on comfort nature and connection with nature. Nine playgrounds are the object of this research. This study is aimed to determine the effectiveness level of the playground in Tembalang using the vegetated-setting approach. The research used a quantitative approach with Guttman-Scale scoring. This study's output assesses the level of effectiveness of the vegetated-setting playground through two aspects. The first aspect, comfort nature, which included in the effective level (71%) in the form of vegetation, protects children from heat and rain while playing, vegetation that provides shelter when children relax or gather under trees, vegetation can cause cold air and the condition of the grass field. It is comfortable to use and is not slippery. In comparison, the second aspect, the connection with nature, is included in the effective level (50%) in the form of plucked vegetation such as fruit or flowers, vegetation that can climb to train the child physically, vegetation that can bring animals to live in, such as birds or butterflies, and grass fields that children can use for running and physical activity.

Keywords: playgrounds, vegetated-setting, effectiveness

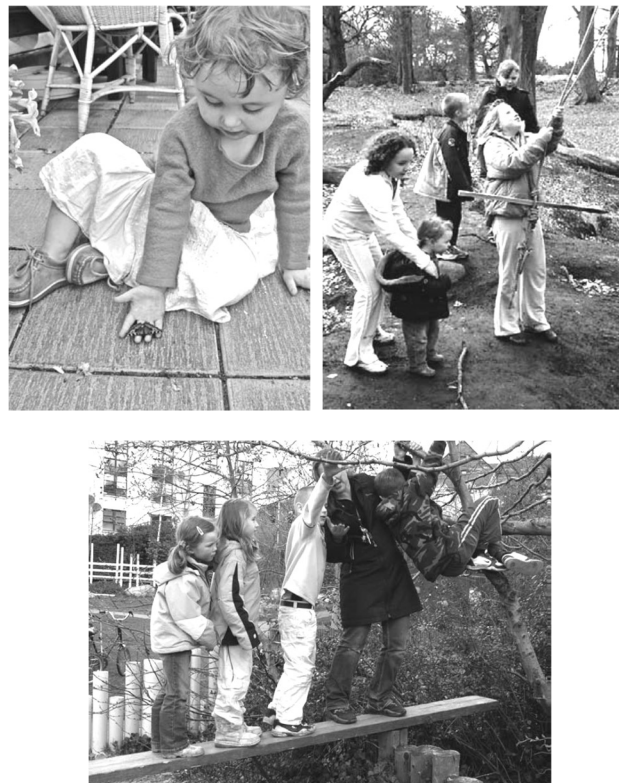
### INTRODUCTION

Urban public space improved the life quality of the citizens [1]. One of urban public spaces is in the form of a playground. Playgrounds are identical to an arena or space equipped with children's play [2]. In public spaces, children can learn several essential skills, such as socializing, making decisions, solving problems, and having a sense of belonging [3]. The use of public spaces must be able to create comfort for its users. A comfortable environment influences one aspect that affects public space comfort in the form of protection from natural influences, such as sunlight and wind. It can be related to the meaning of public space with a relaxed atmosphere by presenting natural elements such as trees, water, and scenery [4]. Public space must be able to accommodate an urban area in order to make users interact with nature [5]. In line with children's playgrounds, it must create spaces that are dominated by natural elements such as large fields, trees, water, and grass [6].

A public sphere is a place for people to carry out functional and traditional activities that bind communities daily at regular intervals [7]. A good playroom design must suit the children's needs at that location, not just copying what has been provided elsewhere [8]. Playgrounds are identical to an arena or space equipped with facilities for children's play. The residential environment is one of the places most often used by children to play activities. These spaces tend to make shift space but are very easy for children to reach to play from where they live. Where playing children can improve emotional development, cognitive, and social benefits. Children can develop motor skills and experiences with social behaviors that simulate alternative scenarios and cope with their behavior's positive and negative consequences in a safe and attractive context [9].

The function of the playground is in contact with nature. By having a contact with the nature, children can feel himself like an insect walking on top of our body, looking up at the sky, lying on the grass, and so forth.

It creates a feeling of protecting nature from any disaster. If children are in direct contact with nature, they can understand the natural space with their five senses to find the natural cycle of life, life rhythm, growth, and sensory of that nature [10]. The importance of nature to children's play and development makes them individualistic human beings. Children like to play using natural elements. The benefits of contact with nature when children are playing are increasing self – confidence, independence, developing motor skills, and reducing negative behaviors such as hyperactivity [11]. One of the ways to create a comfortable public space to engage with a comfortable environment is through the vegetated-setting. Vegetated-setting is a design concept of laying vegetation that the context of a children's playground. It can provide benefits in making children interact with nature and provide comfort when playing. The vegetated-setting approach in assessing the park's effectiveness will see two aspects: comfort nature and connection with nature. Designing playground spaces with a vegetated-setting approach is a characteristic of vegetation that can increase children's interactions with nature. It can demonstrate by the presence of vegetation that can function to smell fragrances or pick fruits, vegetables, and flowers, showing an actualization of children's abilities. Nature-based activities such as winter activities and birthday activities can also affect children's abilities [12].



**FIGURE 1.** The Vegetated-Setting Function of Playground To Help Children Get In Contact With Nature [10]

## METHODOLOGY

The method used is quantitative—data collection techniques with field observations through questionnaires. Tembalang is a sub-district in Semarang City, with many children, around 44% of the total population in 2018. In line with Semarang having received an award as a Child-Friendly City, an increase in the number of children and this status must go hand in hand with the provision of comfortable playgrounds, especially from a vegetated –setting approach. The research location is nine playgrounds in Tembalang District. There are Waduk UNDIP Park, Rusa Park, Citra Grand Park, Tembalang Villa Park, USM Park, Tembalang Regency Park, Taman Graha Wanamukti, Graha Candi Park, and Meteseh Park. Detail research location can be seen as follows:

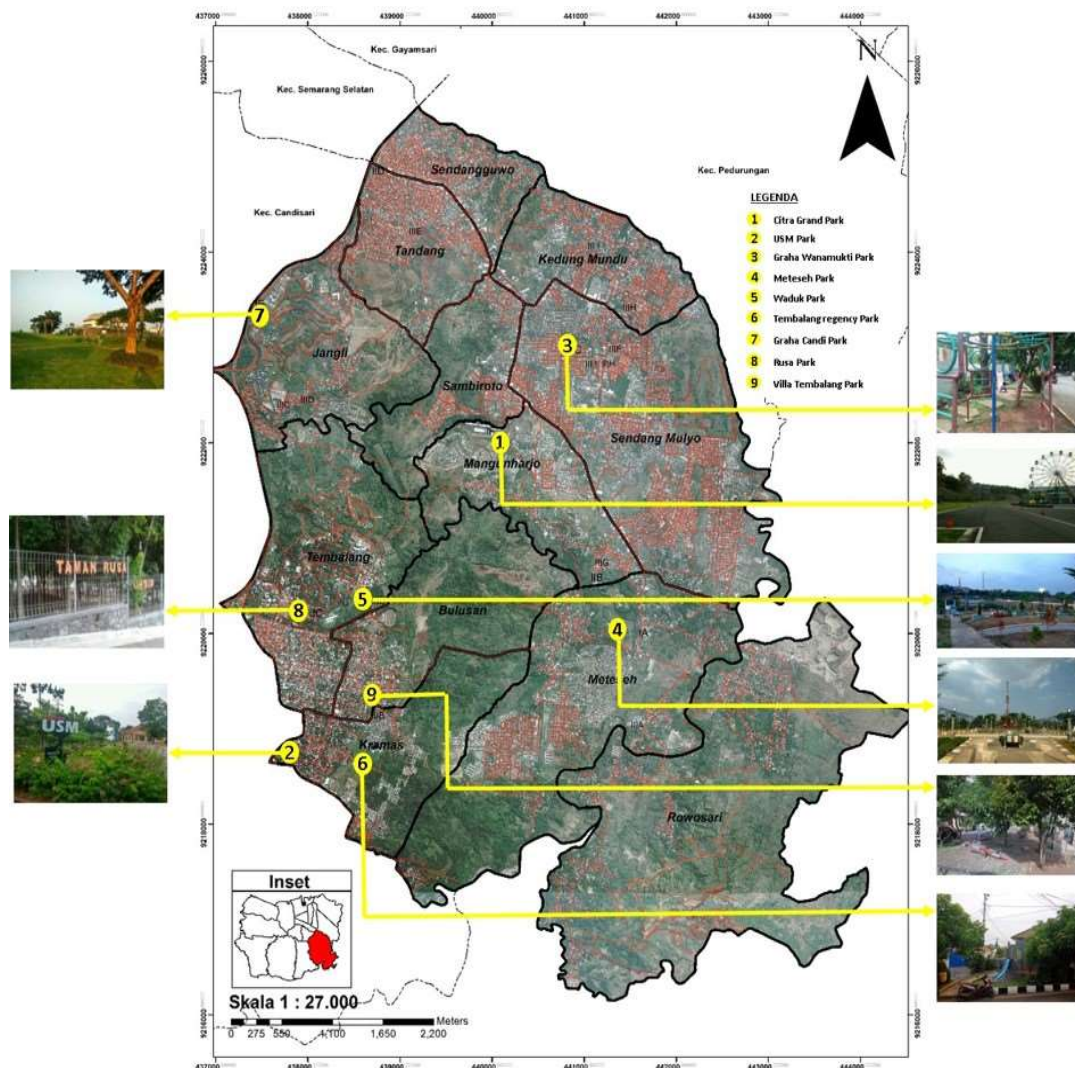


FIGURE 2. Research Location

The sampling technique used was accidental sampling, with 100 respondents in children and accompanying parents. The respondents are playground users. The analysis stages carried out in this study were to see the playground's effectiveness with a vegetated-setting approach. There are two variables for assessing the effectiveness of vegetated-setting as follows:

- Comfort Nature. The vegetated-setting will create comfort for its users. It can be protecting children from heat and rain while playing, providing protection when children are relaxing or gathering under trees, vegetation can create cold air and comfortable and non-slippery grass field conditions.
- Connection with Nature. The vegetated-setting will create vegetation to increase children's interaction with nature. It likes vegetation that can be climbing to train the child's physicality, vegetation that can be picked such as fruit or flowers, vegetation that can bring animals to live in, such as birds or butterflies, and grass that children can use running and physical activity.

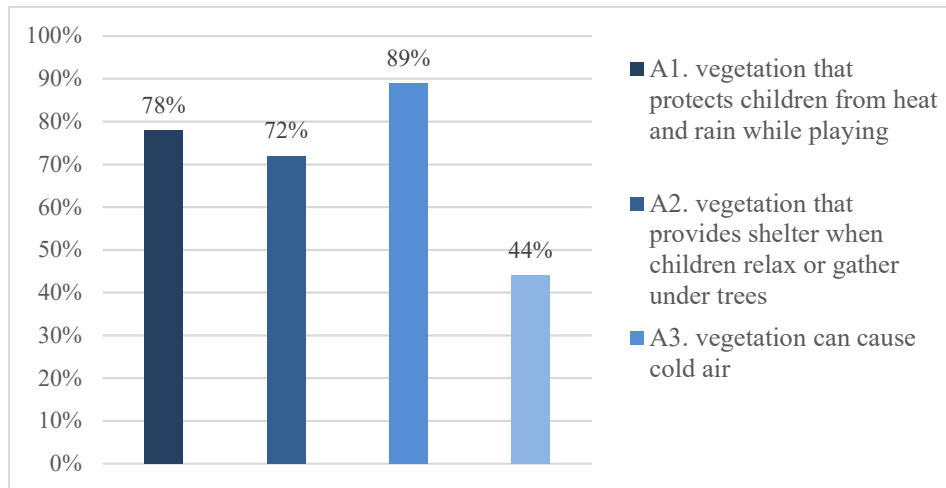
The analysis instrument in this study was the Guttman Scale. First, the value 0 (zero) means no facilities. Second, the value 1 (one) means facilities are available. The facilities are correlated with comfort of the nature and connection with nature aspects. Furthermore, a frequency distribution table is compiled so that the number of respondents who stated that there are facilities available (score 1) and no facilities (score 0) is drawn up. After compiling the frequency distribution table, it is converted into a percentage so that you can see the percentage respondents who stated that there were facilities available and who stated that there were no facilities related to comfort with nature and connection with nature. Percentage later placed into the percentage scale range for the vegetated setting's effectiveness levels as follows:

1. Ineffective Levels (0-49.9%)
2. Effective Level (50-100%)

## RESULT AND DISCUSSION






### The Assessment of Playground Effectiveness Level Using Vegetated-Setting Approach Based on Comfort Nature Aspects

The assessment of effectiveness vegetated setting based on the comfort nature aspect, the effective level with a value of 71%. It means that the ineffective level category as follows tables and graphs:



**FIGURE 3.** Vegetated-Setting Effectiveness Level Based on Comfort Nature Aspects

**TABLE 1.** Assessment of Vegetated-Setting Effectiveness Level Based on Comfort Nature Aspects

Aspects	Effectiveness Level	Description
A1 vegetation that protects children from heat and rain while playing	<b>78%</b> <b>effective</b>	Almost vegetated setting of playgrounds in Tembalang has vegetation that protects children from heat and rain because it has tall and thick trees. 
A2 vegetation that provides shelter when children relax or gather under trees	<b>72%</b> <b>effective</b>	Almost vegetated setting in Tembalang's Playgrounds has provided shelter, and children can relax under trees because it has thick trees.  
A3 vegetation can cause cold air	<b>89%</b> <b>effective</b>	Almost vegetation in playgrounds has Tanjung Tree, and it has the function to cold the air.  

Aspects	Effectiveness Level	Description
A4 the condition of the grass field is comfortable to use and is not slippery	44% <b>ineffective</b>	Only Citra Grand Park, Graha Candi Park, and Meteseh park have a wide grass field, and it can make comfortable for children doing their physical activities and gathering.
<b>71% (EFFECTIVE)</b>		



Based on the assessment results of the effectiveness level of the vegetated-setting playgrounds in Tembalang based on the Comfort Nature aspect, it included at the effective level (71%). The vegetated setting on the playground in Tembalang can protect children while playing in the playgrounds, both from heat and rain. Also, vegetation can cool the air. It will create comfort in terms of nature for children when playing on Playgrounds. However, the availability of green fields for physical activities and social interaction is still not Effective because it can only felt at Citra Grand Taman, Candi Park, and at Meteseh Park. It means that nine playgrounds in Tembalang can make children feel comfortable with natural facilities inside.

### The Assessment of Playground Effectiveness Level Using Vegetated-Setting Approach Based on connection With Nature Aspects

The vegetated-setting assessment of the children's playground based on the connection with the Nature aspect, that the effectiveness level has a value of 50%, which include in the Effective Level category. For more details, see the chart and table as follows:

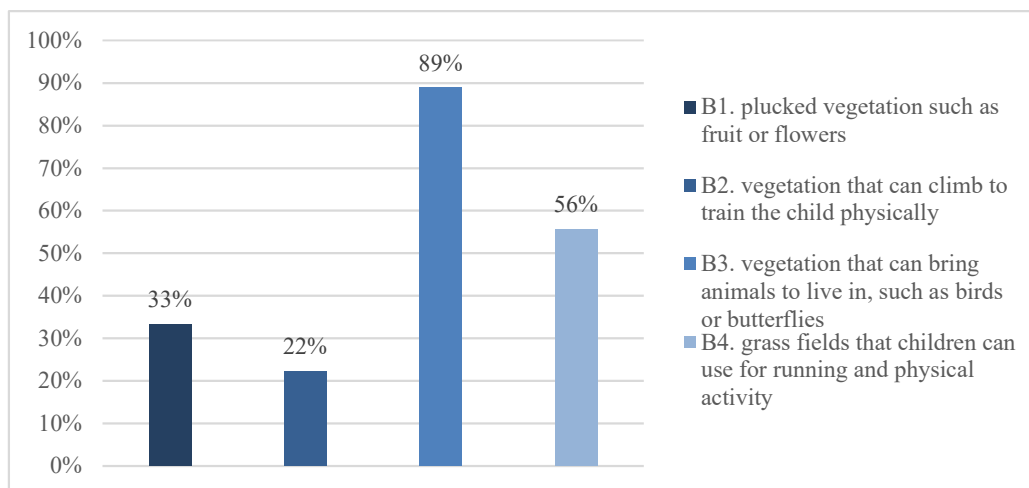






FIGURE 4. Vegetated-Setting Effectiveness Level Based on Connection With Nature Aspects

TABLE 2. Assessment of Vegetated-Setting Effectiveness Level Based on Connection With Nature Aspects

Aspects	Effectiveness Level	Description
B1 plucked vegetation such as fruit or flowers	33% <b>ineffective</b>	Only in Graha Wanamukti Park and Villa Tembalang Park, the vegetation has been plucked such as Mango Trees.



	<b>Aspects</b>	<b>Effectiveness Level</b>		<b>Description</b>	
B2	vegetation that can climb to train the child physically	<b>22%</b>	<b>ineffective</b>	Only in Graha Wanamukti Park and Villa Tembalang Park, the vegetation has certain characteristics such as a strong trunk which can attract children to climb up to take the fruit, which is a mango tree.	
B3	vegetation that can bring animals to live in, such as birds or butterflies	<b>89%</b>	<b>effective</b>	Almost vegetation in playgrounds has attracted animals to live in such as deers, butterflies, and birds.	 
B4	grass fields that children can use for running and physical activity	<b>56%</b>	<b>effective</b>	Almost grass field in Tembalang's Playgrounds can use for running and doing physical activities with safety such as running, lay down, and jump around.	
<b>50% (EFFECTIVE)</b>					

Based on the assessment results of the effectiveness level of the vegetated-setting playgrounds in Tembalang based on the Connection with Nature aspect, it included at the effective level (50%). The vegetated-setting on the playground in Tembalang can bring animals to live in, such as birds or butterflies. Also, grass fields that children can use for running and physical activity. It indicated that playgrounds could make children connecting with nature. However, the plucked vegetation, such as fruit or flowers, is not available. Vegetation that can climb to train the child physically. It means that nine playgrounds in Tembalang can make children contact with nature with all the facilities inside.

## CONCLUSION

Vegetated setting in playgrounds is one of the ways to provide comfort and education for children about an ecosystem environment. The aspect of seeing the vegetated setting is comfort natural and connection with nature. These two aspects of assessing the effectiveness of the playgrounds in Tembalang based on vegetated setting. From the assessment results, the following is the level of effectiveness of the vegetated-setting playground in Tembalang:

- a) **Natural Comfort Aspect**, that a vegetated setting can provide comfort in the playground. The natural comfort aspect's effectiveness level is 71%, which included in the effective level category. It is indicated by vegetation that provides shade, vegetation for shelter, undisturbed vegetation, and comfortable grass fields to carry out activities in almost all the playgrounds in Tembalang.
- b) **Connection with Nature Aspect**, that a vegetated setting that can provide education to children about nature and ecosystems. The level of effectiveness from the aspect of connection with nature is 50%, which was included in the effective level category. It was indicated by the amount of vegetation that children can pick, such as fruit or flowers, vegetation that children can climb, vegetation as a place to live for animals, and grass fields that can be a place to play, run, and other physical activities safely.

Not all playgrounds in Tembalang have vegetated settings related to nature, especially in vegetation that can pick and vegetation that children can climb.

Based on the results of the above assessment, it can be concluded that the vegetated-setting playgrounds in Tembalang has an effective level both in terms of providing natural comfort for children and education to connection with nature.

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