

The Optimization of Movement Space for Early Children in Small Residences

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Abstract

A good residence for a family should meet each family member's needs, enabling them to comfortably carry out activities simultaneously. However, today's housing often struggles to accommodate all the activities of family members due to limited land, particularly for younger family members who require ample space to move around and develop their sensory and motor skills. Young millennial families with young children complain about their limited mobility, especially when they must always stay at home during the past pandemic situation. Therefore, this research was conducted to find alternative solutions to the increasing number of residences on limited land, which can later be maximized to accommodate the need for free movement space for residents of young millennial families who have young children.

Keywords: optimization, mobility, children, residential space

Introduction

Current developments have led to extensive growth in various residential sectors, resulting in an increase in the number of residents. This exacerbates the issue of housing shortages, particularly in urban areas. Given the scarcity of available land, constructing housing on that limited area presents a practical solution. However, having limited land does not necessarily pose an obstacle to designing a residence that maximizes its functionality. Furthermore, a residence with limited land can still accommodate the needs of a family. Despite the limited land, we can implement various steps and design strategies to align residents' needs with the most efficient facilities. This is particularly important for young millennial families with early-age children. Hasanah & Deiniatur (2019) said a family is the smallest social unit that has an important role in the development of children's character, which lies in character education model given by the parents to their children. Based on NSPK (Norms, Standards, Procedures and Criteria) Regarding Instructions Implementation of the Children's Program issued by the Ministry of Education and Culture of the Republic of Indonesia in 2013, one of the requirements for the size of children's playrooms is a ratio of at least 3m per child. The condition of children's needs increases strengthen recognition skills environment is as one part of intelligence kinesthetic (Mufrizon, 2017). In the end it is the result of the process of creating space due to children's movements. Adequate space for movement is beneficial for children because it allows them to improve their growth and development and move freely with a sense of safety and comfort.

Early childhood exhibits distinct characteristics from those of adults. The character of early childhood is unique; it has an egocentric attitude, great curiosity, short-term concentration, a good time for learning, and children are social creatures (Hartati, 2005). According to Jahja (2011), development during childhood can be divided into four types: physical development, cognitive development, emotional development, and psychosocial development. A child's physical development can affect their height and weight, as well as their brain and motor skills. Sinaga & Agus (2021) said that children's motor development is very important to pay attention to because it is appropriate with the characteristics of children, namely playing, so that motor skills are needed good for supporting children's daily activities. Motor skills also work to make children's bodies healthier and their body development progress well because he is able to move well which is indicated by the child's activeness in playing (Sinaga & Agus, 2021). Motor control also influences children's cognitive, emotional, and psychosocial development. This development affects children's ability to explore an environment with peers so that they can freely imagine and create creatively.

Method

The researcher developed a qualitative method for this research by engaging in in-depth communication with the phenomenon under study. The research method primarily employs the following data collection techniques:

1. Interview

Interviews serve as a method for gathering data, where participants respond to a series of written questions or statements (Sugiyono, 2013). During this interview stage, we collected data by asking several questions about the activities and needs of residents, particularly those in early childhood.

2. Documentation

Sugiyono (2013) defines documentation as a method that gathers data and information from books, archives, documents, written numbers, images, reports, and other sources to support research. In this research, data collection techniques were carried out by looking at documents or descriptions of the development of furniture designs that can support movement space, as well as various kinds of information regarding spatial design related to the area of children's movement space.

Result and Discussion

The analysis of the movement space in early childhood, which is linked to basic movement literature, reveals three types of movements:

1. non-moving movements such as sitting, bending, turning, and pushing;
2. moving movements such as running, walking, and rotating around objects; and

3. manipulating activities such as pulling and releasing objects.

These movements position makes the child feel comfortable. Children will feel happy in their environment if the container provides space for movement under safe and calming conditions. Below, we will discuss an illustrative analysis of the positions of non-moving movements, moving movements, and manipulated movements. The analysis of users is applied to the early childhood category in the age range of 0 to 5 years. This age range was chosen based on the variations in movement patterns produced and supported by changes in the child's growth and development in their golden years. The analysis was carried out involving around 30 young children who were carrying out activities from morning to evening in a room area with an area of 50 m².

The size of this area was obtained from the process of simulating the movement positions of young children when doing activities based on basic movement literature. The principles of anthropometry dictate that early childhood is the time for measuring percentile movement dimensions. Therefore, a direct field survey at early childhood care locations is necessary in the initial stage. Field analysis of non-moving movement patterns. Activity patterns include sitting, listening to stories, reading books, drawing, eating, drinking, and sleeping (fig. 1).



*Figure 1. Non-moving movements observed in field survey.
Source: Authors*

This is a field analysis that examines shifting movement patterns. This activity pattern includes doing gymnastic movements, dancing, jumping, walking, and running. The subsequent section provides a field analysis of the manipulation movement patterns. The resulting movement comes from playing tug of war and pushing objects forward (fig 2).



Figure 2. Moving (left, center left) and manipulating (center right, right) movements observed in field survey.
Source: Authors

The field survey observations yield a collection of data that will shape a residential design plan. This residential house plan was chosen in line with the issue of increasingly narrow land limitations. This occurs, especially in large urban environments. One of the case studies was taken at the Carissa House residential location in the Graha Raya housing complex, Serpong, South Tangerang. Carissa's house is a residence lived in by a young millennial family. There are 4 residents, consisting of a father, a mother, 1 child aged 3 years, and a household assistant. The previous plan can be seen in figure 3.

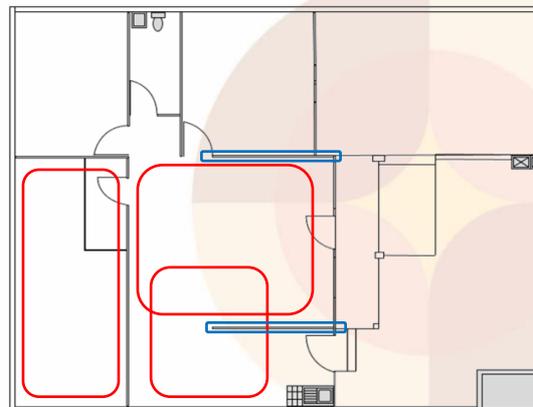
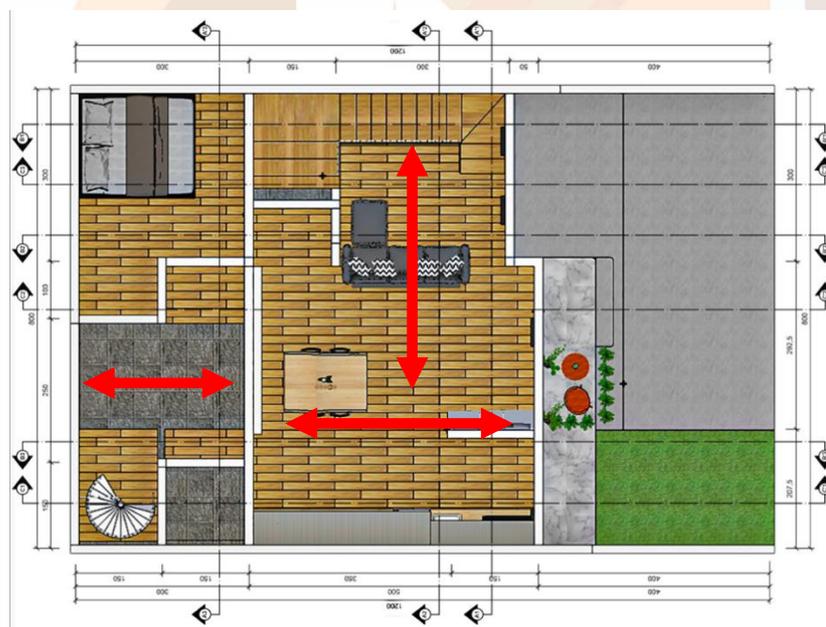


Figure 3. Plan of Carissa House. Red square: observed movement area. Blue square: partitions marked for removal.
Source: Authors

This plan consists of several areas of public space, private space, and service space. The public space, a frequently utilized area for children's play and study, encompasses three distinct areas: the living room, dining room, and back yard, all of which serve as versatile spaces. Various other activities also occur in these three areas. So that children are less able to accommodate their activities optimally. Therefore, it is essential to arrange the layout of this narrow land residence in a way that maximizes the available space for children to play and learn. In the process of analyzing changes to the area in this narrow residence, it is necessary to renovate the room partitions. This is intended so that the function of the interior space can be maximized and child occupants have ample space for activities.

In the case study of Carissa's house, there are two partitions that can be removed (fig. 4), namely the one in the middle of the building. These two partitions actually support the structure of the building, so if these partitions are dismantled, it will result in the addition of building columns to maintain the sturdy quality of the house construction. An alternative plan has been created based on the adjustments made to the removed building partitions. The first partition to be removed was the partition that separated the bedroom from the living room. When the partition is dismantled, what happens is that the size of the family room becomes wider on the right side of the building.



*Figure 4. Room layout after removal of partitions in central area of the building.
Source: Authors*

A space like this allows children to freely move towards the right side of the building. A sofa serves as a space divider and supports children's motor skills, enabling them to practice climbing and jumping, ensuring the building doesn't feel too empty. The partition wall between the kitchen and living room turned out to be a structural wall, making the complete removal of the second partition impossible. Therefore, the form of spatial circulation that occurs is vertical, extending from the living room to the kitchen. The back room also experiences a form of vertical circulation.

This research will proceed by analyzing the simulation of early childhood movement in space, following a space redesign process that eliminates partitions and optimizes the space's dimensions. It is hoped that the next step will continue by reviewing the extent to which space in limited housing can be maximized to accommodate the movement patterns of young children.

Conclusion

The analysis above suggests that designing residential spaces to optimize early childhood movement patterns necessitates taking into account several factors. This is because children's activities and movement needs consist of passive and active movement patterns. In order to maximize the quality of residential safety, it's crucial to consider the shape of the building structure that supports the construction load. In the case of the Carissa House, the dimensions still align with the standards recommended by the literature. However, upon review, it becomes clear that the resulting space's shape does not provide maximum comfort in accordance with the definition of a child's proper movement space. In this way, designing the interior of a residence with limited land should really take into account the needs of its users, namely children aged under 5 years. Designing housing with limited land is a crucial aspect to consider, as land is becoming increasingly scarce in today's world and young children require ample space for movement to support their growth and development. We hope to advance to the next research stage, which involves direct field observation and experimental studies in residential expansion areas at the location.

References

- Hartati, S. (2005). *Perkembangan Belajar pada Anak Usia Dini*. Jakarta: Departemen Pendidikan Nasional.
- Hasanah, U. & Deiniatur, M. (2019). Character Education in Early Childhood Based on Family. *Early Childhood Research Journal (ECRJ)*, 2(1), 29–42. <https://journals.ums.ac.id/index.php/ecrj/article/view/6578>
- Jahja, Y. (2011). *Perkembangan Psikologi*. Jakarta: Prenadamedia Group.
- Mufrizon, H. (2017). Arsitektur dan Ruang Gerak Anak dalam Lingkungan. *Journal UMN*, IX(2), 39–47. <http://dx.doi.org/10.31937/ultimart.v9i2.750>
- Sinaga, Y. S. R. & Agus, R. M. (2021). Kemampuan Mobilitas Gerak Anak Usia Dini 4 Sampai 5 Tahun Melalui Gerakan-Gerakan Senam. *Journal of Art & Education*, 1(1), 58–64. <https://doi.org/10.33365/jae.v1i1.32>
- Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif dan R & D*. Bandung: Alfabeta.

Further Readings

- Ching, F. D., & Binggeli, C. (2011). *Desain Interior dengan Ilustrasi*. Edisi kedua. Jakarta: PT. Ideks.
- Ching, F. D. K. (2000). *Arsitektur Bentuk Ruang dan Susunannya*. Edisi kedua. Jakarta: Erlangga.
- Direktorat Jenderal Pendidikan Anak Usia Dini dan Pendidikan Masyarakat (2015) *Norma, standar, prosedur, dan kriteria (NSPK) petunjuk teknis penyelenggaraan taman kanak-kanak*. Jakarta: Direktorat Jenderal Pendidikan

Anak Usia Dini dan Pendidikan Masyarakat, Kementerian Pendidikan Dan Kebudayaan. <http://repositori.kemdikbud.go.id/id/eprint/11876>

Gardner, H. (2003). *Multiple Intelligences: Kecerdasan Majemuk Teori dan Praktek*. Batam: Interaksara.