

DEVELOPMENT CENTER FOR ORPHANED AND NEGLECTED CHILDREN WITH A BEHAVIORAL ARCHITECTURE APPROACH IN MEDAN

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Abstract (English)

One of the most significant social problems in large urban areas, including Medan, is the issue of neglected children. The prevalence of abandoned children is influenced by a range of factors, including economic instability, lack of preparation for parenthood, and family disharmony. It is not uncommon to find these children in locations such as crossroads and public spaces, where they may be offering services or requesting donations. In light of the rising population of Medan City, it is imperative to devise a unique solution for the care of abandoned children. Therefore, it is important to design a development center for orphaned and neglected children which adopts a behavioural architecture approach. This approach is designed to create spaces that support children's psychological and physical well-being, facilitate their activities, and provide moral teaching and education to prepare them for social life. This research employs a descriptive qualitative methodology, utilising a combination of primary and secondary data collection, a literature review and a field survey. The results show that the design of center for orphaned and neglected children should be able to meet the needs of children for self-develop and their daily activities.

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1. Introduction

The issue of neglected children represents one of the most significant social challenges facing contemporary society. The reality of being a neglected child is an inevitability that must be accepted due to a number of underlying circumstances and factors. These include economic problems, unpreparedness to become parents and family disharmony [1]. Collectively, these factors contribute to the increasing number of neglected children. Neglected children are deprived of the opportunity to experience the love and support that should be inherent to the family unit.

Neglected children are commonly observed in urban areas, such as medan. Such children are frequently observed at traffic intersections and roadside stalls, offering services or soliciting donations [2]. From a psychological perspective, children who have been abandoned tend to exhibit a lack of emotional and mental stability [3]. The harsh circumstances they face can have a detrimental impact on their development and the formation of their personality.

The Indonesian government has enacted a regulation, namely Central Government Regulation Number 31 of 2013, with the objective of addressing the issue of street children, vagrants, and beggars [4]. According to data from the Indonesian Central Statistics Agency (BPS), the population of Medan City in 2021 was 2,460,858. It is estimated that the population of Medan City will reach 2,494,512 by 2022 [5]. The causes of this increase can be attributed to a number of factors, including natural phenomena such as the birth rate, death rate and urbanisation flow. The data indicates that Medan is among the cities with the highest population density. Concurrent with the population growth in Medan City is an increase in the number of children each year. A review of available data indicates a consistent upward trend in the child population, which is in line with the increasing population growth rate from year to year. This phenomenon ultimately contributes to economic instability [4]. This has led to a situation in which many children are neglected and have become independent, active, indifferent and creative. It is therefore evident that such children require special attention and regular coaching,

which can be achieved through architectural design with a behavioural approach and the subject of street children aged 6-18 years. The selected facility is an orphanage with a child development centre that employs a behavioural architecture approach. This enables the facility to serve as a means of adjustment for children, including moral teaching, psychology, and education, with the objective of preparing them for life in society.

Orphanages, as a type of social welfare institution, are responsible for ensuring that the rights of children are fulfilled, especially those who have lost parental care [6]. This institution functions as a surrogate family, offering spiritual, emotional, and social support to facilitate optimal growth and development in children, thereby preparing them to become independent and engaged members of society [7]. Children in orphanages generally come from various vulnerable backgrounds, such as orphans, abandoned children, children of single parents, children neglected due to economic limitations, children born out of wedlock, and children with physical or mental disabilities [7]. In contemporary society, orphanages have evolved to serve as institutions that not only provide care for orphans but also for children who have been abandoned, victims of domestic violence, and children exposed to other forms of adversity. In Indonesia, the number of children in similar circumstances is estimated to be approximately 4.1 million. A significant number of these children are placed in orphanages due to the inability or unwillingness of their families to provide adequate care. Consequently, orphanages function as a surrogate for familial structures, wherein caregivers provide care, guidance, and nurturing to facilitate the development of children into independent, responsible, and productive members of society [8].

Santoso posited that an orphanage is a well-known institution for the nurturing of the development of abandoned children who have no family [9]. The role of orphanage carers is to provide care and guidance to orphanage children, thereby fulfilling the function of parents in nurturing and preparing them to become responsible and productive members of society [9]. The majority of children residing in orphanages have experienced neglect or abandonment by their parents, often due to economic hardship, being born out of wedlock, or having physical or mental disabilities.

The environment in which human behaviour occurs exerts a powerful influence on it. A number of variables can exert an influence on human behaviour. These include the space used for user activities, the size and shape of the space, the spatial arrangement that reflects user characteristics, the regulation or change of behaviour and quality of space by colour, the strong influence of room temperature on the user's psyche, and the significant impact of lighting on human behaviour [8]. The use of bright lighting can prove distracting, whereas the application of dark lighting may result in discomfort to the eyes [8].

Behavioural architecture is defined as a field of study that incorporates behavioural considerations into architectural design. The relationship between behaviour and architectural design can be conceptualised as a two-way street, whereby architectural design can either facilitate or impede behaviour (JB Watson) [10]. The principles of behavioural architecture can be applied to the built environment, facilitating the integration of user activities within a context of physical and psychological comfort, as well as aesthetic appeal. . Thus, this study aims to design a center for orphaned and neglected children that can provide shelter, education and livelihood for orphaned and neglected children[8].

The behavioral approach is a design method that integrates aspects of human behavior into the design process. As asserted by Victor Panek, behavior-based architecture acknowledges user behavior responses and needs as pivotal components in all phases of design (Laurens 2004 in Anggilina, O., 2018) [11]. It is imperative that children who have been neglected have access to a safe and comfortable space that can support their activities and emotional stability. The experience of discomfort, which may manifest as feelings of cramped spaces, a perceived lack of privacy, and oppressive corridors, has been shown to elicit feelings

of fear and a desire to return to one's previous environment. Consequently, a behavioral architecture approach is imperative to ensure that the shelter space fosters a sense of security, calmness, and belonging. [12]. The principles of behavioral architecture, as articulated by Carol Simon Weisten and Thomas G. David, underscore the significance of designs that facilitate effective communication between humans and their environment. The form of a building, according to these principles, must be readily comprehensible through the senses and imagination of its users. In an ideal scenario, edifices would mirror their designated function, exhibit suitable dimensions and proportionality, and showcase the materials and structural techniques employed. Furthermore, the design should prioritize physical and psychological comfort for its occupants, taking into account the conditions and behaviors of users to create functional and enjoyable spaces [13].

2. Methodology

The design method commences with data collection, which is then subjected to analysis and synthesis before being transformed into a design concept. The design method employed is the qualitative descriptive method. As posited by Bogdan and Taylor (1982), qualitative research is a research procedure that generates descriptive data in the form of written or spoken words from individuals and observable behaviour. [14]. Primary data is obtained from informants and direct observation of the research object in order to gain a comprehensive understanding of the location and condition of the object in question. Bungin (2013: 128) defines primary data as information obtained directly from the primary source in the field. In qualitative research, the primary data sources are the words and actions of the individuals observed or interviewed. [14]. In the meantime, secondary data is gathered from books or literature studies that discuss the planning and design of orphanages, with sources that are regarded as reliable.

The method of selecting the location of the design site is carried out by considering a number of criteria, in accordance with the findings of the literature review and the results of the field survey.

The selection of the design site is predicated on several critical criteria, including its proximity to primary thoroughfares, thereby ensuring convenient access for visitors and building users. Additionally, the site's accessibility by public and private transportation is a key consideration. Furthermore, the surrounding environment must be maintained in a clean state and supported by the availability of adequate facilities and supporting infrastructure [8].

3. Result and Discussion

3.1 Project Location

The design site is situated at street Taipan Nauli No. 1, within the jurisdiction of Medan Sunggal, Medan City. The location is a vacant plot situated within a high-density residential area, with an area of 1 Ha. In accordance with the zoning map included in the detailed spatial planning of the city of Medan for the period 2015-2035, the location in question is situated within the RDTR of the city of Medan Sunggal. This area is designated R1, which permits the construction of single houses, coupled houses, row houses, official houses, government flats, social homes, asramah houses, and apartments. The selected location is therefore deemed to be suitable for the proposed orphanage development. In accordance with the regulations pertaining to the intensity of spatial use of the city of Medan, the design location is subject to the following provisions: KDB 80%, KDH 15%, with a maximum building height of 4 floors /18 metres.

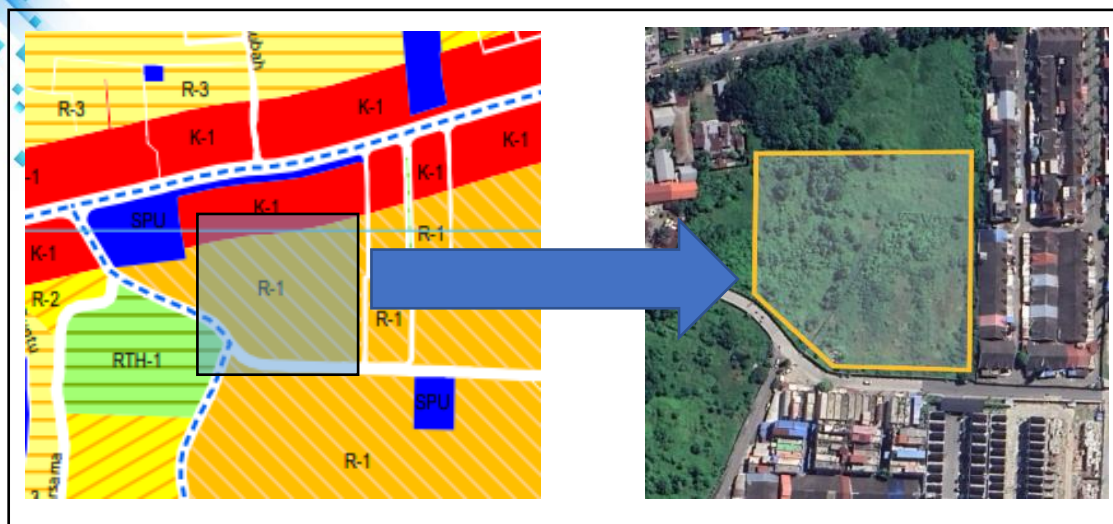


Figure 1 Location project

The boundaries of the design site reveal the diverse characteristics of the surrounding environment. To the east and south, the site borders directly on a residential complex, indicating that this area has developed as a residential area characterized by a high level of social activity. Concurrently, to the west, the site is adjacent to unoccupied land that is also situated in proximity to the residential area, thereby offering the possibility for additional development in the future. On the northern side, the site is adjacent to a commercial district, suggesting the presence of economic activity and the potential for commercial entities to provide for the daily needs of the orphanage residents. The existence of these boundaries serves to demonstrate that the location in question boasts a vibrant and functional environment, thereby supporting the presence of social institutions such as orphanages.

3.2 Space Requirements

Table 1. Space requirements

| Activity | Activity details | Activity actor | Space Requirements |
|----------|---|---|--|
| User | Learn Eat Rest Socialization Play Sleep Worship Clean up Cook Wash | Babysitters, caregivers, workers | Skills space Dining room Living room Multipurpose room Parks, playgrounds, sports fields Bedroom Mushollah Bathroom Kitchen Laundry |
| Manager | Administration Supervision | Orphanage employees and orphanage heads | Office Operator Security Office |
| Visitors | Organizer room Nursing home building | Visitors, donors | Parkiran Children's room |

3.3. Basic Concept

The orientation of the building mass is centred towards the middle, with the shape of the building mass consisting of several masses which are divided based on the function and use of each building (figure 2). The open space is positioned in the centre of the building to maximise the air and natural lighting entering the room. The design of an orphanage with a behavioural architecture approach entails the application of the concept of home to the orphanage design[15] .

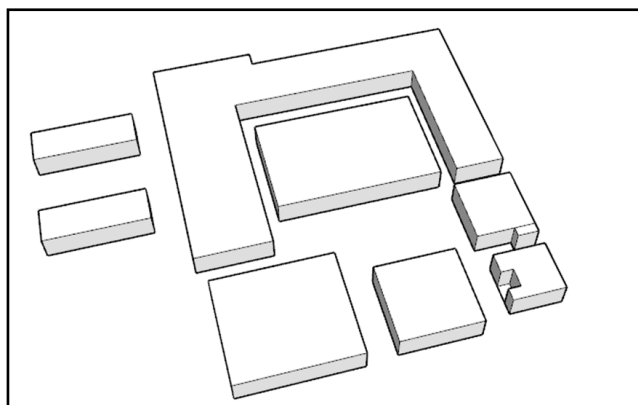


Figure 2 building mass

This concept imbues the building with a sense of familiarity and belonging, fostering a sense of family within the structure. The design of the children's development centre is intended to serve as a venue for a range of social activities for children who will be provided with various resources before transitioning to independent living. The objective is to equip children with the requisite knowledge, skills and social competencies to enable them to function effectively within the wider social context. The rationale behind the design of this development centre is in accordance with the tenets of behavioural architecture, which places a premium on user comfort and tailors the spatial configuration to align with user activities, facilitating social interactions that foster a sense of community among users.

Table 2. Descption design Concept

| Design Concept | Description |
|---|---|
| <p>Sun</p> <p>Figure 3 Response of vegetation to the sun</p> | <p>The ingress of direct sunlight into the building can be mitigated through the incorporation of a secondary envelope or sun shading on the building facade. The incorporation of vegetation within the immediate vicinity of the structure can serve to deflect the sun's radiant energy, thereby preventing its unimpeded penetration into the interior space.</p> |

Noise

Figure 4 Noise reduction

It is possible to utilise vegetation as a means of reducing noise levels from external sources. The positioning of buildings at a considerable distance from the source of noise can also serve to attenuate the level of noise entering the building.

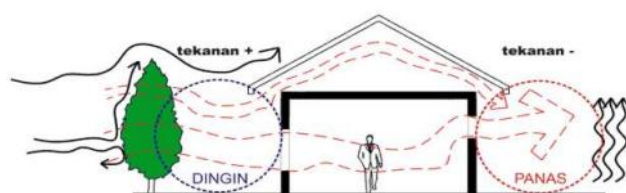
Wind

Figure 5 Wind response for natural ventilation

The utilisation of vegetation serves to impede the progression of strong winds, thereby preventing direct contact between the wind and the building. This approach is employed with the objective of reducing the wind load on the building. Furthermore, the utilisation of vegetation is advantageous for the filtration of external airborne pollutants and the introduction of natural ventilation into the building through the optimisation of existing apertures.

3.4 Design Result

Figure 6 site plan

The circulation flow for vehicles and pedestrians is differentiated, with the entrance lane situated on the right side of the site and pedestrian paths located on the right and left. The location of the bus parking area is on the left side of the front tread, in order to facilitate access for the fire department at the edge of the site.



Figure 7 Exterior

The orientation of a building can impact the comfort of its residents. In the view analysis conducted, the site demonstrated the potential to capitalise on the view to the west, given the availability of vacant land in that direction. To the south, there is a road with residential housing.




Figure 8 Legenda site

- | | |
|-------------------------------------|---|
| 1. Children's and babysitter's room | 9. Warehouse |
| 2. Kitchen & R. Eat, R. Play | 10. The house of the owner of the orphanage |
| 3. Managing office | 11. Sports field |
| 4. Guard post | 12. Farm |
| 5. Mushollah | 13. Playground |
| 6. Multipurpose Room | 14. Car Parking |
| 7. Shophouse | 15. Motorcycle Parking |
| 8. Skills space | 16. Bus parking |

Facilities available in the orphanage:

Table 3. Description design result

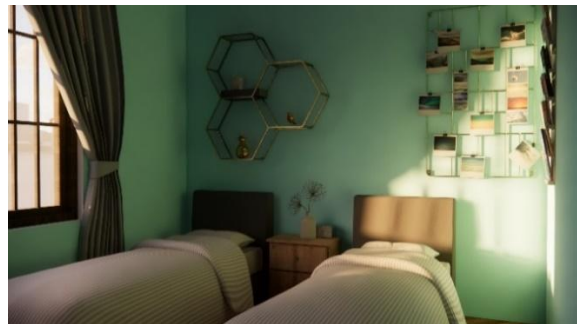
| Design Picture | Deskription |
|---|---|
|  | <p>The design presents a vegetable garden that is able to stimulate children's senses of sight and touch related to the environment through gardening activities. The visualisation of the garden situation will engage children's imagination.</p> |



The hall has been designed with the objective of accommodating the activities of its occupants in a comfortable and pleasant manner. This is evidenced by the design of the space within the hall, which conveys a sense of comfort. From the selection of colours and materials, an impression of elegance and spaciousness is conveyed.



The playground has been designed in accordance with the proportions, age and physical condition of children, thereby eliminating any potential concerns regarding the safety and suitability of the facility for its intended users.



The property comprises 30 bedrooms for children, five rooms for the caretaker and infant, four rooms for the infant's nanny, six rooms for the nanny, and several other rooms. With the exception of the nursery, each room is occupied by two residents.



Other facilities are in the form of sports fields, there is also a skills room, a park and also parking, besides that there are also other facilities that support activities in the orphanage.

The design integrates a vegetable garden that serves to stimulate the senses and awaken the imagination of children through gardening activities, so that children can learn to interact with the environment directly. The hall is designed to present a comfortable and pleasant space, with an emphasis on spacious interiors and an elegant feel, so as to support various activities involving children and other residents. The playground is carefully designed to suit the age, body size and physical condition of the children, equipped with safety elements that prevent the risk of injury, thus providing a safe and enjoyable play experience.

4. Conclusion

The design of this orphanage is designed to support the growth of neglected children to become independent and responsible individuals. Through a behavioral architecture approach, the orphanage seeks to create a harmonious interaction between the environment and its users, and provide facilities that support physical and psychological comfort. This approach ensures that the children's various activities, such as education and coaching, can run optimally in a supportive and well-functioning environment.

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6. Conflict of Interest

The authors whose names are listed below certify that the manuscript does not have a conflict of interest. This statement is signed by all the authors to indicate agreement that the above information is true and correct.

Author's Name

Author Signature

Date


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2024

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References

- [1] A. Herlina, "KEHIDUPAN ANAK JALANAN DI INDONESIA: FAKTOR PENYEBAB, TATANAN HIDUP DAN KERENTANAN BERPERILAKU MENYIMPANG," *Pus. Pengkajian, Pengolah. Data dan Inf. Sekr.*, vol. 5, pp. 145–155, 2014.
- [2] D. E. N. Safitri, W. W. Widjajanti, and ..., "Arsitektur Perilaku Pada Desain Wadah Sosial Anak Jalanan di Bandung, Jawa Barat," ... *Semin. Nas. Sains* ..., pp. 307–314, 2020, [Online]. Available: <http://ejournal.itats.ac.id/sntekpan/article/view/1251/0>
- [3] A.- Ruswanto and O. Senjaya, "STUDI KASUS ANAK TERLANTAR DI INDONESIA BERSUMBER PADA KAJIAN SOSIOLOGI HUKUM," *JUSTITIA J. Ilmu Huk. dan Hum.*, vol. 6, no. 1, p. 100, 2023, doi: 10.31604/justitia.v6i1.100-107.
- [4] J. Simon, "Implementasi Program Pembinaan Anak Jalanan di Dinas Sosial Kota Medan," *J. publik UNDHAR MEDAN*, vol. 11, no. 2, pp. 51–58, 2017.
- [5] "BPS Kota Medan Jumlah Penduduk Kota Medan," Medan, BPS kota. [Online]. Available: <https://medankota.bps.go.id/id/statistics-table/2/MTAyZlI=/jumlah-penduduk-kota-medan-menurut-kelompok-umur-dan-jenis-kelamin.html>
- [6] M. Rasyidi, S., I. Nurjannah, and B. Amri, S., "PENERAPAN ARSITEKTUR PERILAKU PADA PERENCANAAN PANTI SOSIAL ASUHAN ANAK (PSAA) DI KOTA KENDARI," *Garis J. Mhs. Jur. Arsit.*, vol. 8, no. 1, pp. 76–82, 2023.
- [7] M. B. Pratama and S. W. Ginting, "RASA KEPEMILIKAN : PENERAPAN KONSEP ' HOME ' DI PANTI ASUHAN A PLACE TO BELONG : IMPLEMENTING ' THE MEANING OF HOME ' CONCEPT AT AN ORPHANAGE Dinas Sosial Kota Medan menunjukkan bahwa pada tahun 2021," *JAUR (Journal Archit. Urban. Res.*, vol. 7, no. April, pp. 204–215, 2024, doi: 10.31289/jaur.v7i2.11666.
- [8] S. A. Indriyati, *Perencanaan dan Perancangan Hunian Panti asuhan anak dengan konsep arsitektur perilaku (pedoman teori dan praktis)*. 2020.
- [9] T. Li. Widyaningsih and Basiron, "Pemberian Bimbingan Belajar Bahasa Inggris Kepada Anak Tulungagung," *J-ADIMAS (Jurnal Pengabd. Kpd. Masyarakat)*, vol. 5, no. 1, pp. 5–9, 2016.
- [10] A. Saputri *et al.*, "Lembaga Pembinaan Khusus Anak (Lpka) Kelas I Di Blitar Tema: Arsitektur Perilaku," *Pengilon J. Arsit.*, vol. 5, no. 01, pp. 531–548, 2021, [Online]. Available: <https://ejournal.itn.ac.id/index.php/pengilon/article/view/3623>
- [11] O. Anggilina, M. D. Susilawaty, and P. Aldy, "PANTI ASUHAN PUTRI DI KOTA PEKANBARU DENGAN PENDEKATAN ARSITEKTUR PERILAKU," vol. 5, pp. 1–7, 2018.
- [12] Herlika, P. Aldy, and R. Amanati, "PANTI ASUHAN ANAK TERLANTAR DI PEKANBARU DENGAN PENDEKATAN ARSITEKTUR PERILAKU," *Jom*

FTEKNIK, vol. VOL 3 NO.2, 2016.

- [13] H. Marlina and D. Ariska, "Arsitektur Perilaku," *Rumoh J. Archit.*, vol. 9, no. 18, pp. 47–49, 2019, doi: 10.37598/rumoh.v9i18.81.
- [14] M. P. . Rahmadi, S.Ag., *Pengantar Metodologi Penelitian*, vol. 44, no. 8. 2011. [Online]. Available: [https://idr.uin-antasari.ac.id/10670/1/PENGANTAR METODOLOGI PENELITIAN.pdf](https://idr.uin-antasari.ac.id/10670/1/PENGANTAR%20METODOLOGI%20PENELITIAN.pdf)
- [15] H. P. Sari *et al.*, "Arsitektur Perilaku Pada Desain Wadah Sosial Anak Jalanan di Bandung, Jawa Barat," *PURWARUPA J. Arsit.*, vol. 7, no. 2, p. 149, 2023, doi: 10.31289/jaur.v7i2.11666.