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Anthropometrics as a Design Concept for Christian Children's Orphanages in Surabaya

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ARTICLE INFO	ABSTRACT
	Surabaya is one of the largest metropolitan cities in Indonesia with all the developments that have taken place, from development, technology, education, and others. However, even so, there are still many Child Welfare Institutions (LKSA) or child orphanages that have not received accreditation, as much as 71.7% of child orphanages in Surabaya have not been accredited. This means that there are still many orphanages that have not met the eligibility standards, both in terms of area related to the comfort of the residents. Therefore, through this research it is hoped that it will be able to create a design for an orphanage that meets eligibility standards and is able to provide personal space for its residents. In designing this orphanage, a behavioral architectural approach with anthropometric concepts was used to produce the designs. This study uses a qualitative method with a case study type to analyze problems in Christian children's orphanages. Then, collecting information and data obtained from literature studies and coming to the field to make direct observations of the object of study. Thus, it can create orphanage buildings that not only contain functional values but are livable and able to present personal space. **Keyword:** Children's orphanage, Feasibility, Anthropometry, Personal space, Livable

ABSTRAK

Surabaya menjadi salah satu kota metropolitan terbesar di Indonesia dengan segala perkembangan yang terjadi, dari pembangunan, teknologi, pendidikan, dan lain-lain. Namun, meski demikian Lembaga Kesejahteraan Sosial Anak (LKSA) atau panti asuhan anak masih banyak yang belum mendapat akreditasi, sebanyak 71,7% panti asuhan anak di Surabaya belum terakreditasi. Artinya, masih banyak panti asuhan anak yang belum memenuhi standar kelayakan, baik dari aspek luasan yang berhubugan dengan kenyamanan penghuni. Oleh karena itu, melalui penelitian ini diharapkan mampu menciptakan perancangan panti asuhan anak yang memenuhi standar kelayakan dan mampu menghadirkan ruang personal bagi penghuninya. Pada perancangan panti asuhan ini, pendekatan arsitektur perilaku dengan konsep antropometri yang digunakan untuk menghasilkan desain rancangan. Penelitian ini menggunakan metode kualitatif dengan jenis *case study* untuk menganalisa permasalahan pada panti asuhan anak Kristen. Kemudian, pengambilan informasi dan data yang didapatkan dari studi literatur dan datang ke lapangan untuk melakukan observasi secara langsung terhadap objek studi. Sehingga, dapat menciptakan bangunan panti asuhan yang tidak hanya mengandung nilai fungsional tetapi layak huni dan mampu menghadirkan ruang personal.
Keyword: Panti asuhan anak, Kelayakan, Antropometri, Ruang personal, Layak huni

1. Introduction

Children's orphanages play an important role in maintaining the quality of the nation's next generation. However, the condition of children's orphanages in Surabaya cannot be considered adequate based on data obtained from the Surabaya City Social Service. It can be seen from the bar chart data below that there is an

imbalance between the number of children in orphanages. For example, in South Surabaya there are almost 900 children, while in West Surabaya there are only around 250 children. Apart from the uneven number of children in orphanages, apparently 71.7% of the total registered orphanages are still not accredited. Meanwhile, accreditation itself aims to establish standards for the appropriateness of running an orphanage. Of the 219 registered orphanages, only 62 orphanages have been accredited (Surabayatoday.id, 2022). This means that there are still many orphanages that are operating but are still not suitable or do not meet standards.
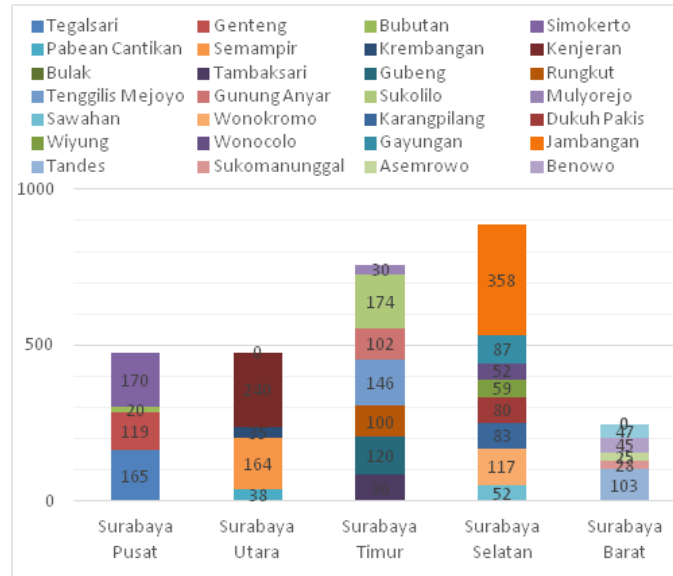

Figure1. Number of orphanage children per district.
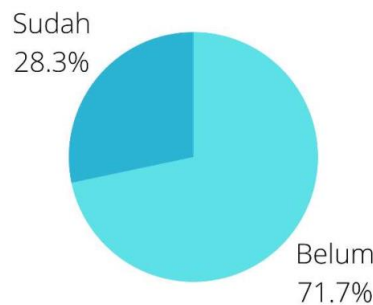*Source: Statistik Sektoral Kota Surabaya, 2021*

Figure 2. There are many orphanages that have and have not been accredited.
Source: Dinas Sosial Kota Surabaya, 2020

In obtaining accreditation, orphanages must pass 6 assessments, namely, program standards, management and organization, facilities and infrastructure, human resources, service processes, and service results (Yuliani and Hartini, 2017). From the various aspects of the assessment, facilities and infrastructure emphasize the field of architecture, such as having permanent buildings, suitability of space for the number of occupants, as well as providing separate spaces for men and women. However, most of the Christian children's orphanages in Surabaya currently still combine male and female areas, only providing different rooms. So that children do not have their own territorial area, apart from that, usually 1 bedroom can be occupied by more than 10 children using bunk beds, resulting in children not having their own private space. Almost 90% of the space provided in orphanages is shared, so there is no personal space and privacy for the residents.

2. Method
Qualitative methods were used in the preparation of this study. The qualitative method itself is a research method that operates on a simple qualitative approach with an inductive flow (Mohajan, 2018). The qualitative method used in this study is a qualitative case study from Cresswell. Case Study or case study is a

method that uses a method to investigate phenomena in real life, the limits of phenomena and things that are not clearly visible and multiple sources of evidence are used. Faisol said that a case study is research that understands a problem intensively, looking deeper, in more detail and interacting with each other (Robert, 2013). A case study is a series of scientific activities carried out in detail, intensively and looking deeper into an event, activity in the environment at the level of an individual, group, institution or organization to obtain something new that can be selected further which is a real case, is currently happening and not something that has already happened. (Izzaty et al., 1967). According to Basuki, case studies have 3 types, namely: (Sulistyo B, 2006)

1. Intrinsic case studies are cases that have an interest originating in the case itself or cases that give rise to intrinsic interest.
2. Instrumental case studies are cases that are studied or understood in depth with the aim of generating a previously existing theory or developing a new theory.

Instrumental cases have an interest that comes from outside or external to the case.

Collective case studies are cases that study either groups or individuals within each group, with the aim of knowing or getting the general characteristics of the case. This is because each case is different and has its own different characteristics.

3. Discussion

The design of this Christian children's orphanage uses behavioral architecture with the concept of anthropometry, where the design takes into account the body size of school-age children to create proportional space for children aged 7-19 years. In addition, it also pays attention to the personal space and privacy of children based on their needs according to their age and gender and regulates their territoriality which refers to a group of behavioral settings. In this design, the building is divided into 4 masses based on its use, namely management area, communal area, children's dormitory, and youth dormitory. The purpose of separating the mass of the building is to be able to maintain the safety of children as residents of the orphanage and provide privacy like a place where no one can enter. The management area is used by staff and employees who work for the administration of the orphanage, while the communal area is a building that is used as a place to receive guests and share activities with all residents of the orphanage, such as a prayer room, library, reading room, counseling room, prayer room. dance arts room, martial arts room, music room, sewing room, and so on. In the mass buildings for dormitories are divided based on the age level of education, namely the children are 7-12 years old while the teenagers are 13-19 years old. This division is because the body sizes of children and adolescents are different, adolescents are more concerned with their body development towards adulthood so that it affects user behavior and the design of the room.
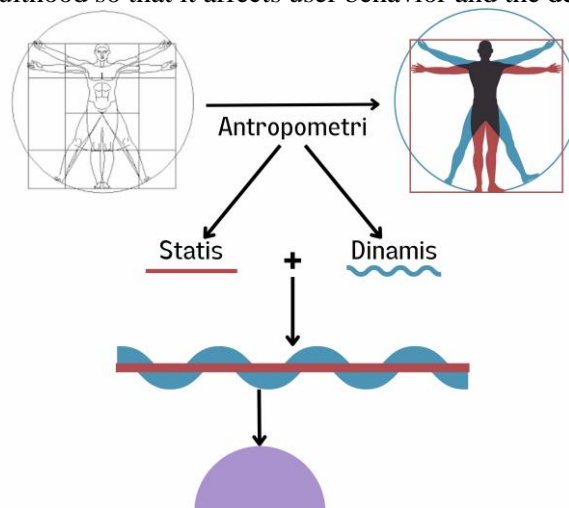

Figure 3. The concept of anthropometry becomes a building form.
Source: Personal, 2023

In designing this orphanage using anthropometric concepts, one of which is the use of the shape of the building. In anthropometry there are two basic areas, namely static anthropometry and dynamic anthropometry. Static anthropometry is a measurement of a person's body that will not change, such as human height. Thus, measurements are taken when the body is static or not moving, such as on a bed, table, chair, and so on. Meanwhile, dynamic anthropometry is the measurement of the human body when carrying out activities and movements, related to the relationship between furniture and space use. For example,

measurements are taken on factory employees while running or using equipment in that room. Therefore, static anthropometry can be described as a straight line with a fixed and rigid nature, while dynamic anthropometry is described as a waveform that is more flexible and seems flexible. From the merging of the two forms, a semi-circle shape was found, so the basic shape in designing this children's orphanage is a semi-circle shape. Then these shapes are transformed to find the shape of each building mass, so that the four building masses have different shapes but come from the same basic formation. Seen in Figure 2, the shape transformation process to produce the floor plan and building mass.
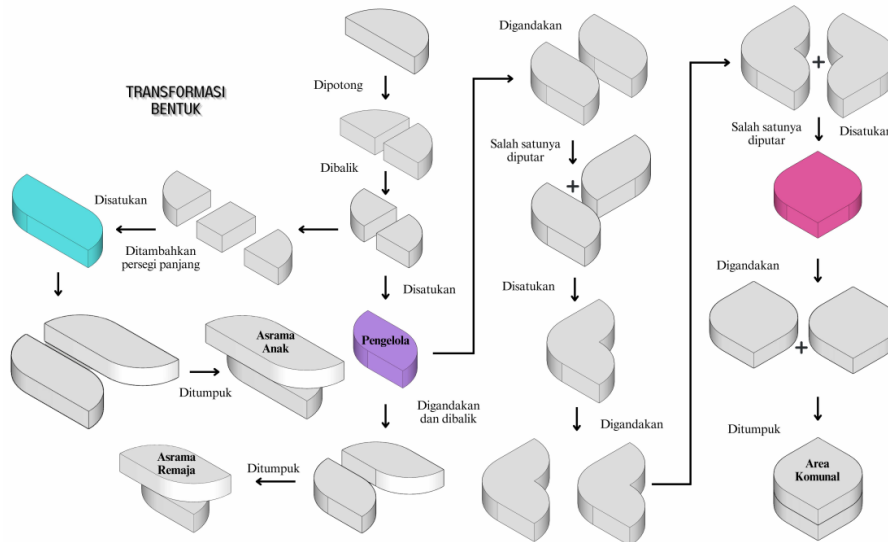

Figure 4. Transformation of the shape of the building mass.
Source: Personal, 2023

The semi-circular shape is divided into two equal parts, then one side is turned over and put back together to produce a building shape for the mass management area. Then, the management mass formation is stacked in half and the top is turned over to produce a dynamic mass formation, where this formation is used as the form of the children's dormitory. Meanwhile, the shape of the youth dormitory building mass is also the same as the shape of the children's dormitory, but the youth dormitory is more elongated than the children's dormitory building. Finally, the shape of the communal area building uses a combination of the management area forms. Where one of the parts is rotated and put together, resulting in a shape like the letter 'L'. Of the two formations, one of them is reversed and the two are combined to produce a floor plan for the communal area. Then, the formations were duplicated and stacked to create a mass formation of buildings in the communal area. Of the four formations, the mass of the buildings that were created formed the whole of this children's orphanage.

Figure 5. Exterior isometry and block plan.
Source: Personal, 2023

The picture above is the result of the arrangement of the four building masses that are formed. The building in the middle is a communal area that is also used as a reception building. The placement of the communal area in the middle aims to make it easier for every occupant of the orphanage to go to the building, both from the children's dormitory, youth dormitory, and the management area. Then, the parking lot is placed close to the entrance to make it easier to find a parking space. In addition, it is also close to the management area. The park is placed on the far side of the road, because this park is a playground for children so that it is safe to place it away from motorized vehicle roads, but close to the children's dormitories and youth dormitories. Children's dormitories and youth dormitories which are private areas of the orphanage are placed on the north and east sides of the site area, so they cannot be in direct contact with the outside environment of the
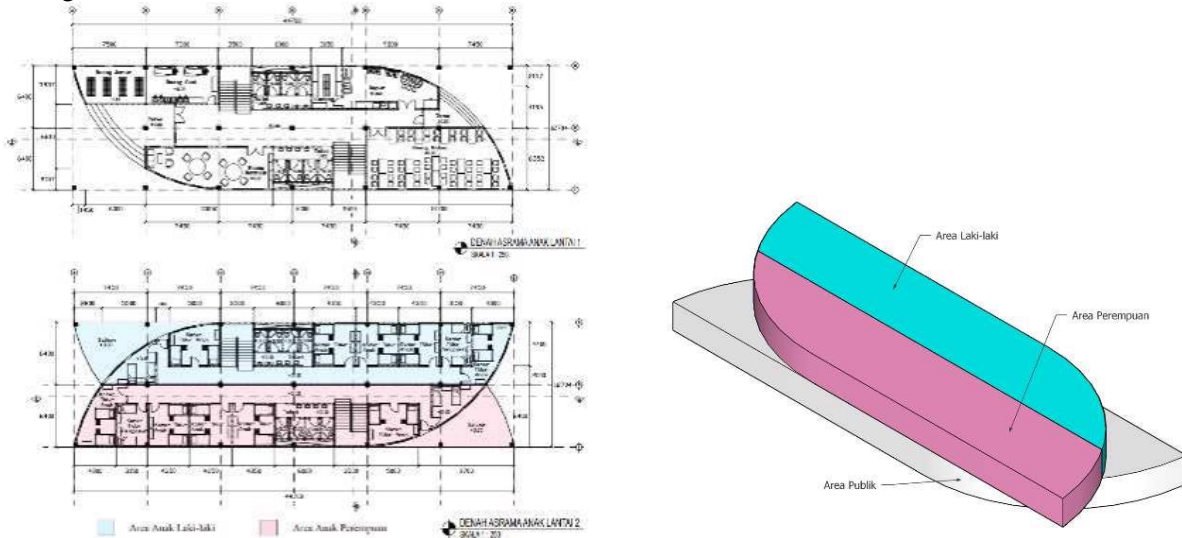
orphanage.

Figure 6. Plan and division of children's dormitory areas.
Source: Personal, 2023

Then on the inside of the building, in an effort to maintain the privacy of the residents of the orphanage, on the 1st floor the children's dormitory is used as a public area where children carry out activities together, such as a dining room, kitchen, playroom, washing and drying room, and so on. The washing and drying areas in the children's dormitories are still combined, because the caretakers of the orphanage still help the children wash their clothes. Meanwhile, on the 2nd floor, as a private area, it only contains a bathroom and bedroom. On this 2nd floor, it is divided into 2 sides separated by a wall with the aim of separating the girls' area from the boys' area to maintain everyone's privacy. On the women's side, the area is equipped with bedrooms for supervisors or caregivers, totaling 4 people, as well as on the male side, the area is also equipped with bedrooms for caregivers. This children's hostel building has a capacity for 40 children and 16 caregivers.

Figure 7. Floor plan and division of youth dormitory areas.
Source: Personal, 2023

Likewise in the youth dormitory area, floor 1 is a public area used by all residents of the building. While on the 2nd floor there are bedrooms and bathrooms, while on the 3rd floor there are bedrooms, bathrooms and a laundry room. In youth dormitories, the laundry room is on the top floor, and is separated between men and women because each person is responsible for washing their own clothes. On floors 2 and 3, which are areas with limited access, the side of the women's area cannot be accessed by boys, and vice versa. Just like in the children's hostel, the youth hostel is also given a bedroom for supervisors. Where on the 2nd floor there is 1 supervisor's bedroom in the women's area and 1 supervisor's bedroom in the men's area, and on the 3rd floor it is the same. In this youth hostel can accommodate 40 children and 16 supervisors. So overall, this orphanage can accommodate up to 80 children with 32 supervisors to live in, supervisors are different from management staff who work and don't live.
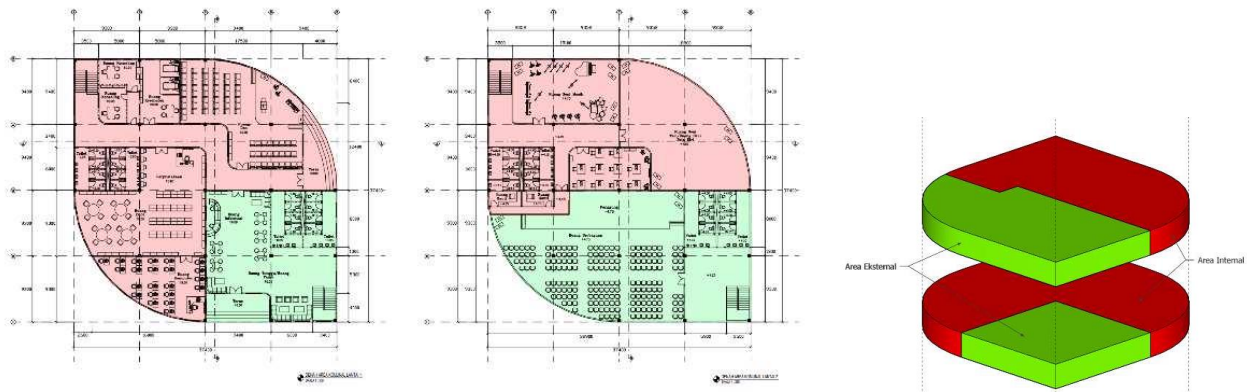
Figure 8. Plan and division of communal areas.
Source: Personal, 2023

In the communal area, there are 2 floors but the distribution is per room not per floor like in a dormitory building. Where the division is based on areas that can be used by outsiders or guests (external) with areas used by residents of the orphanage (internal). There is a separator between the external and internal parts, so that outsiders cannot enter the orphanage carelessly. Visiting guests will first go to the information section to convey their needs, then a sitting area is also provided as a waiting area which is one with the information area. So that the area that can be accessed by outsiders is only the information room and waiting room and toilets on the 1st floor, while on the 2nd floor there are toilets and function rooms for holding events (Easter, Christmas, New Years, birthdays, etc.) or watching art performances brought by the children of the orphanage. Then, rooms that can be accessed for residents of the orphanage, such as on the 1st floor there is a library which is integrated with the reading room, there are 2 counseling rooms and 1 health room and toilets on each floor. On the 2nd floor there are spaces to train children's self-development, such as a music art room, dance art room, martial arts room, and sewing room.
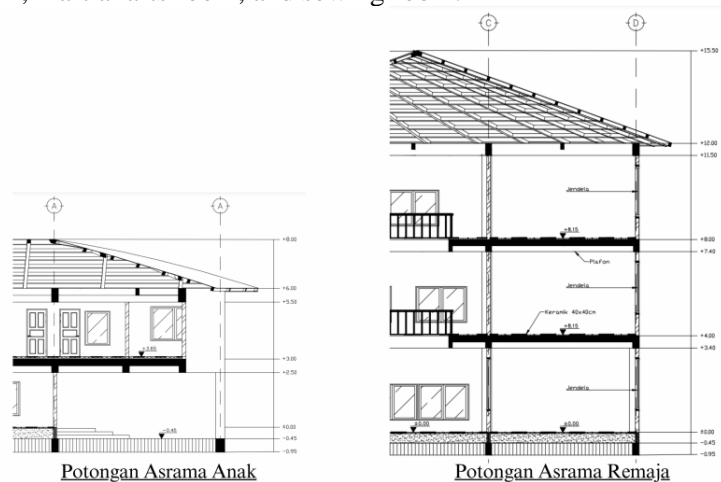

Figure 9. Children's dormitory and youth dormitory deductions.
Source: Personal, 2023

In addition to the division of floors and rooms, there are also differences between building masses. As seen in the picture above, there are differences in the number of floors and floor to floor heights between the children's dormitories and youth dormitories. Where the children's dormitory with 2 floors has a height of 3 meters, this affects the height of the stairs provided, which is 15 cm. So that children will have no difficulty in using the stairs because of the sloping footing. Meanwhile, in the youth dormitory the height per floor is 4 meters, so that each stair has a normal height of 20 cm. Then, the selection of colors used in the room will affect the psychology of the occupants. The dominant color chosen for the interior of the room is white, because white creates the impression of a clean and spacious room. However, each child's room is given a different color between boys and girls.
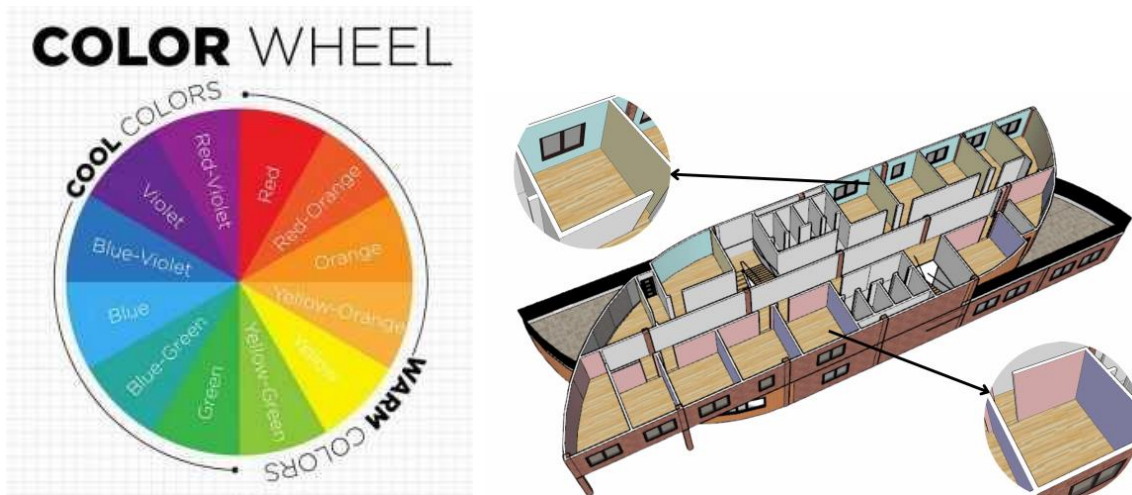
Figure 10. Color flywheel in depth in color psychology theory.
Source: Personal, 2023

In the boy's room, the walls are predominantly light blue and yellow. The color blue itself means freedom, inspiration, imagination, peace, and can help calm the mind. And the color yellow itself can give energy and brightness, as well as create a cheerful, optimistic and enthusiastic atmosphere. Meanwhile, the girls' room is dominated by pink and lilac. The color pink conveys a feminine impression, and brings a happy and relaxed feeling. And the color lilac helps reduce aggression and anti-social feelings, and can increase energy and encourage fun. Apart from that, the flooring was chosen as vinyl flooring material because this material provides a warm and comfortable atmosphere when stepped on due to the flexible nature of the vinyl material itself, so it feels pliable when stepped on.

4. Conclussion

The design of this children's orphanage aims to produce a design that pays attention to conformity with the child's body measurements to create a space that suits the needs of children aged 7-19 years. The design of Christian children's orphanages with a behavioral architectural approach can create a comfortable circulation of users. In this research, to provide comfortable circulation in the building by providing an appropriate corridor area, because the corridor is a circulation area for users by paying attention to lighting and ventilation. The behavioral architectural approach is applied to spaces in buildings, where designs can present personal space for the occupants. By paying attention to space, size and shape, furniture arrangement, color, temperature and lighting, you can produce a personal space design that suits the daily activities of orphanage residents. Personal space is essentially attached to the human body, not only when interacting with other people. Each has a personal space to be able to bring the comfort of living together in one building mass. In designing an orphanage, pay more attention to the area of the building and the capacity for the number of children it accommodates. So that we can maximize services for orphans, orphans and abandoned children and there will be equality between orphanages, there are no orphanages that have excess or shortage of foster children. Then, in design design, the behavioral architectural approach takes into account a person's personal space needs and can be maximized in its application to the design of Christian children's orphanages through more in-depth study.

5. Acknowledgements

References

Agustya, Agustya (2017) *Penyebab Anak Tinggal Di Panti Asuhan At-Taqwa Muhammadiyah Kecamatan Rambatan Kabupaten Tanah Datar.* Sarjana thesis, STKIP PGRI Sumatera Barat.

Akayuure, P., & Alebna, V. (2016). Investigating the Effect of Origami Instruction on Preservice Teachers' Spatial Ability and Geometric Knowledge for Teaching. International Journal of Education in Mathematics, Science and Technology, 4(3), 198-209. https://doi.org/10.18404/ijemst.78424

Chendra, J. F. (2017). Panti Asuhan Kristen Pondok Kasih di Semarang. eDimensi Arsitektur Petra, 5(2), 657-664.

Erfinanto, Erik. 2021. "Lebih Dekat dengan Surabaya, Kota Metropolitan Terbesar Kedua di Indonesia", https://surabaya.liputan6.com/read/4677538/lebih-dekat-dengan-surabaya-kota-metropolitan-terbesar-kedua-di-indonesia, diakses pada 10 September 2022 pukul 14.48.Triyana, A. (2020). *Perancangan Arsitektur V*.

Fakriah, N. (2019). Pendekatan Arsitektur Perilaku Dalam Pengembangan Konsep Model Sekolah Ramah Anak. Gender Equality: International Journal of Child and Gender Studies, 5(2), 1. https://doi.org/10.22373/equality.v5i2.5585

Hatta, H. R. (2019). *Perancangan Sistem Informasi Terpadu Pemerintah Daerah Kabupaten Paser*. *53*(9), 1689–1699.

Ii, B. A. B., & Asuhan, P. P. (2004). *Panti Asuhan Anak Terlantar di Kabupaten Magelang*. 20–41.

Levina, L. (2021). Panti Asuhan Kristen Anak dan Remaja di Surabaya. eDimensi Arsitektur Petra, 9(1), 249-256.

Mamele, S. (2014). Pendidikan Agama Kristen Bagi Anak Yatim Piatu Di Panti Asuhan Bukit Harapan Pakowa (Doctoral dissertation, Institut Agama Kristen Negeri Manado).

Mohajan, H.(2018): *Qualitative Research Methodology in Social Sciences and Related Subjects. Published in: Journal of Economic Development, Environment and People.* Vol. 7 No. 1 (31 March 2018): pp. 23-48.

Owen, D. (2020). Perancangan Panti Asuhan Dengan Pemaknaan Home di Jakarta Barat (Doctoral dissertation, Podomoro University).

Redaksi. 2022. "Meningkatkan Minat dan Bakat Anak-Anak Panti Asuhan Cinta Kasih Medan", https://suarausu.or.id/meningkatkan-minat-dan-bakat-anak-anak-panti-asuhan-cinta-kasih-medan/, diakses pada 11 September 2022 pukul 13.50.

Saputro, B. W., Musyawaroh, & Handayani, K. N. (2018). Penerapan Desain Arsitektur Perilaku Pada Perancangan Redesain Pasar Panggungrejo Surakarta Bagus. *Senthong*, *1*(2), 203–212.

Sendari, Anugerah. 2019. "Mengenal Jenis Penelitian Deskriptif Kualitatif pada Sebuah Tulisan Ilmiah", https://hot.liputan6.com/read/4032771/mengenal-jenis-penelitian-deskriptif-kualitatif-pada-sebuah-tulisan-ilmiah, diakses pada 11 September 2022 pukul 14.54.

Surabayatoday.id. 2022. "Dinsos Dorong Semua LKSA Terakreditasi A", https://www.surabayatoday.id/2022/07/16/dinsos-dorong-semua-lksa-terakreditasi-a/, diakses pada 11 September 2022 pukul 22.08.

Triyana, A. (2020). *Perancangan Arsitektur V*.

Triastuti, S., Mulyadi, & Fauziah, P. (2012). Peranan Panti Asuhan Dalam Pemberdayaan Anak Melalui Keterampilan Sablon. *Diklus, Edisi XVI, Nomor 02, September 2012*, *14*(2), 120–133.

Yuliani dan Hartini. (2017). Pengaruh Pendampingan Persiapan Akreditasi terhadap Tingkat Kesiapan Lembaga Kesejahteraan Sosial Anak dalam Mengikuti Akreditasi (Studi Kasus di LKSA Amanah Bunda Kota Bandung) Laporan Penelitian Mandiri. Pusat Penelitian Sekolah Tinggi Kesejahteraan Sosial Bandung

Yuliani, W. (2018). Metode penelitian deskriptif kualitatif dalam perspektif bimbingan dan konseling. Quanta, 2(2), 83-91.