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Advances in Applied Science Research, 2012, 3 (1):19-30

ISSN: 0976-8610
CODEN (USA): AASRFC

Residents' perception of the built environment quality in an orphanage

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ABSTRACT

The perception of residents' on the quality of the built environment in an orphanage was studied. The focus was on the Kumasi Childrens' home in the Ashanti Region of Ghana. Through a combination of different research methods, residential, educational and recreational facilities of the Childrens' home were analysed. The interview results showed high satisfaction with the available services on the part of both the children and the adults. However, the researcher's observation was that some of the aspects of the built environment rated positive (good) by the children could not be justified. Nevertheless, all the other aspects of the interviews were in line with the Childrens' perception (good or satisfying). It is recommended that the design of future orphanages should consider the perception of residents' especially the children in order to provide facilities that will be useful and promote excellent growth in the children.

Keywords: orphanage, built environment, Childrens' perception.

INTRODUCTION

All over the world, orphans in times past and present, have lived in homes called Orphanages or children homes. Whereas some of these facilities tend to cater for many more needs than just the provision of accommodation [1], others merely provide safe accommodation for these children. In Ghana, the role of orphanages cannot be underestimated. It has minimised the street-children syndrome and helped curb certain socio-economic problems like petty theft among orphans and needy children. Unfortunately, a greater number of these orphanages do not operate with the license as well as the stipulated standards of operation thereby endangering the lives of these children.

Studies have shown that neglected children lack proper physical, emotional and psychological support [2]. Unfortunately, not enough orphanages are available to cater for the number of children who fall into the category of orphans. There is a limited number of government owned Childrens' homes to cater for orphans and as a result, non-governmental institutions have been encouraged to set up facilities to provide care for orphans so that they do not become destitute.

According to [3] in 2005, the Department of Social Welfare (DSW) identified 55 private orphanages operating in the country. In that same year, the government stated that all orphanages operating without license are operating illegally. Instead of this information leading to a reduction in the number of orphanages, it rather led to an increase. According to the DSW, in 2007, there were 120 private orphanages operating in Ghana indicating a more than 100% increase. This increase is due to the popularity and income generated from the orphanage business [3]. A UN global study revealed that orphanages are often set up by states or a well meaning donor for children in need of care. The initial intentions of these orphanages are often well meaning but the care provided in them is grossly inadequate and culturally inappropriate in Ghana [4]. Furthermore, most of the orphanages have insufficient accommodation facilities, leaving the few available rooms overcrowded. This is also the case for other supporting spaces like toilets, dining areas and recreational areas. These lead to children being exposed to all sorts of negative behaviour and

abuse. [4] further reported that the conditions under which children in orphanages are kept are generally unacceptable. Most orphanages operate without licenses and do not follow the Childrens' Homes Guide or the Childrens' Act (1998) as a working document by the Department of Social Welfare.

The objective of the study was to find out how the residents' especially the children within the orphanage perceive their built environment and what lessons could be drawn from the home to positively affect future design and construction of Childrens' homes.

MATERIALS AND METHODS

The aim of the study was to assess residents' perception on the quality of the built environment of orphanage or Childrens' homes. In the process, multiple research approach was used. For instance, a case study approach was used to analyse local and international facilities (SOS Home in Tema and Kumasi Childrens' Home (in the Greater Accra and Ashanti Region of Ghana respectively), and the Amsterdam orphanage in the Netherlands). Furthermore, the Kumasi Childrens' Home located in Kumasi with a population of 125 children was used as a main case study since it was representative of the available orphanages in Ghana (see Fig. 1).

Both qualitative and quantitative research methods were used by combining observation with focus group interviews to ascertain the Childrens' perception of their built environment within the Kumasi Childrens' Home and analysing the results in the form of graphs, tables and charts.

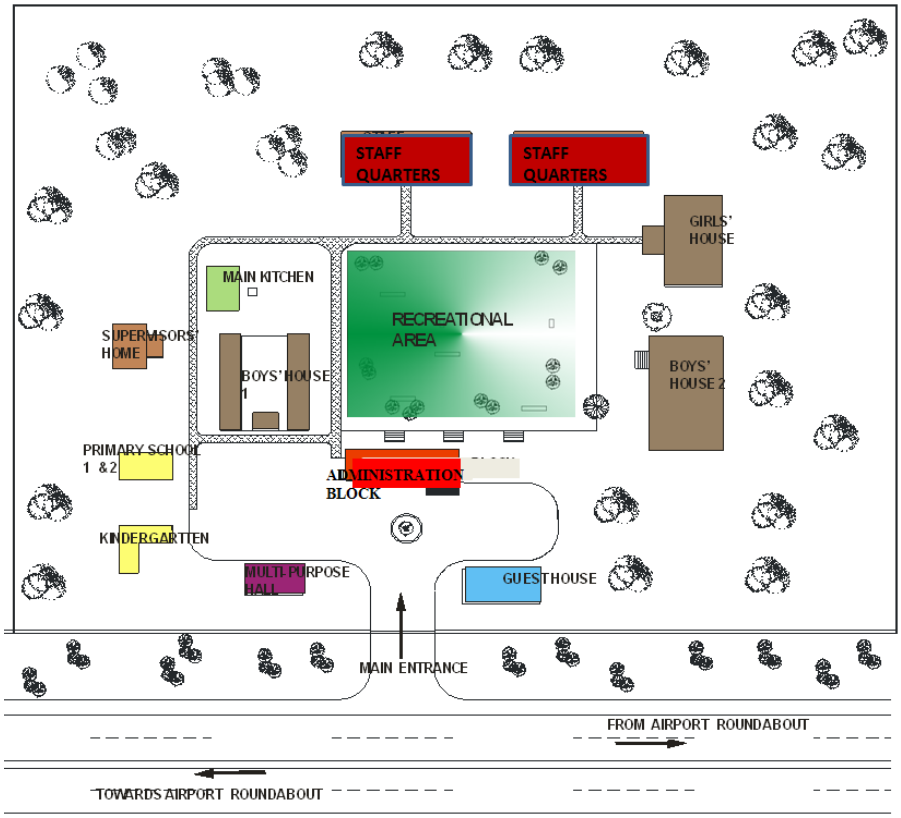

Fig. 1: Layout of the Kumasi Childrens' Home

A quota sampling approach was used to select 75 of the 125 children and 10 of the 20 staff members who participated in the interviews. This number was chosen based on the study of [5] who suggested that if the population size is small (less than 200), a 40% or more sample size will be adequate. With the quota sampling method, the population was first stratified by ages. This approach allowed the researchers to observe relationships between subgroups.

The participants were divided into subgroups using their ages as the index. In all, there were 6 groups with the least group having 9 children and the biggest group having 20 children with all the staff members in one group. The various groups were engaged in focus group discussions that lasted between 1 to 2 hours per group. Children below

the ages of 15 years were intentionally left out on the thermal and visual environment perception since they did not fully understand these variables in order to make meaningful contributions. It must be noted that during the focus group discussions, the aspects of the environment stated in the results were thoroughly explained to the children before their views were sort. However there may be some intrinsic qualities in the respondents that affected their evaluation of the environment. This could form a new area of study.

Finally, lessons drawn from the study were used to influence the design of a Childrens' Home facility in Yendi (in the Northern Region of Ghana). Lessons will be outlined in later pages. The design proposals (administrative, educational, residential and recreational facilities) demonstrate sustainable design principles such as conviviality which is in accordance with efficient spatial planning aims and objectives.

To a large extent, the data gathered from the interviews was processed with Microsoft Excel, because of its high compatibility with a number of other applications. Other software applications used in the study were Corel Draw and AutoCAD. Corel Draw was used to edit and improve the image qualities and AutoCAD was used to draft and model the architectural representations. The outcome of the focus group interviews based on the subjective opinion of the occupants of the Childrens' homes were tabulated and graphed (using mean and percentage values) in MS Excel (2007 edition).

Overview of the Kumasi Childrens' Home

The Kumasi Childrens' Home is one of the homes that were established by the government of Ghana in 1965 to provide shelter for children in need of care and protection in the middle belt of the country. The Osu (Accra) and the Tamale Childrens' Homes are the other two that was established to take care of these children in the South and in the North of Ghana respectively.

The whole facility is represented in Fig.1 with three residential facilities. The table below give a detailed description of the Kumasi Childrens' Home as the main object of the study.

Table 1- Detailed description of the Kumasi Childrens' Home

Building code	Boys' house 1	Boys' house 2	Girls' house	Childhood centre	Administration
Function	residential	residential	residential	educational	Office
Layout type	courtyard	Enclosed	verandah	verandah	Verandah
		Double bank			
Orientation of buildings	North south	North south	North south	North south	East west
Thermal controls	Naturally ventilated	Naturally ventilated	Naturally ventilated	Naturally ventilated	Naturally ventilated
Lighting controls	Manually controlled	Manually controlled	Manually controlled	Manually controlled	Manually controlled
Windows	Operable	Limited operability	Operable	Operable	Operable
Condition of building	Good Condition: Painted, doors intact, Windows fixed.	Good Condition: Painted, doors intact, Windows fixed.	Good Condition: Painted, doors intact, Windows fixed.	Good Condition: Painted, doors intact, Windows fixed.	Good Condition: Painted, doors intact, Windows fixed

RESULTS

The review of local and international orphanages with regards to spatial configuration showed that the family based system adopted by SOS in Tema (Community 6, Ghana) presents one of the best ways of caring for children in need of protection. It provides an environment where every abandoned child feels part of a family. The Kumasi Childrens' Home (Ghana), with the dormitory system of operating and caring for the children, presents a weaker way of offering child-development. These are children who have been neglected, abandoned, surrendered and orphaned, and as such will need all the love and care they can get. The dormitory system however prevents the children from receiving the needed degree of affection. The Amsterdam Orphanage showed an interpenetration of modern architectural ideas enriched by patterns and forms and by balancing repetitive pavilions. The orphanage shows a good example of hierarchy of spaces, from private spaces to semi-private spaces and then to public spaces. It also offers a clear understanding of building clusters.

Fig. 2 shows the gender ratios of the interviewees and Fig. 3 elaborates the age distribution of the occupants who responded to the interviews. The period of stay at the facility is reported in Fig. 4 whereas the perception of the occupants on their thermal and visual environment is represented in Fig. 5. The general perception of the environment is illustrated in Fig. 6 and Tables 1 and 2 show opinions of the children on aspects of the building. Fig. 7 shows the occupants appraisal vote on available structures and Table 3 details their votes in percentages on the quality of spaces. The general feelings on the physical environment and its performance are represented in Figs. 8 and 9. Fig. 10 shows the vote on environmental conditions of some of the buildings and spaces. The mean vote of the interviewees on the performance of residential and administrative buildings, and on the dining and study spaces showed that 97.3% of the children found the performance to be good, and 2.7% of the children found it to be poor.

Furthermore, the conceptual site planning for the proposed Childrens' home in Yendi (Ghana) is shown in Fig. 11. Fig. 12 shows the site layout and Fig. 13 shows a graphical representation of a cluster of Childrens' home. The architectural representations of the proposed facility are shown in Fig. 14.

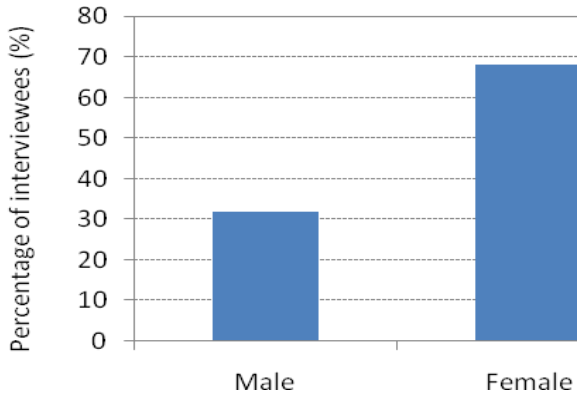

Fig 2 Information on interviewees (total number of 85 persons)

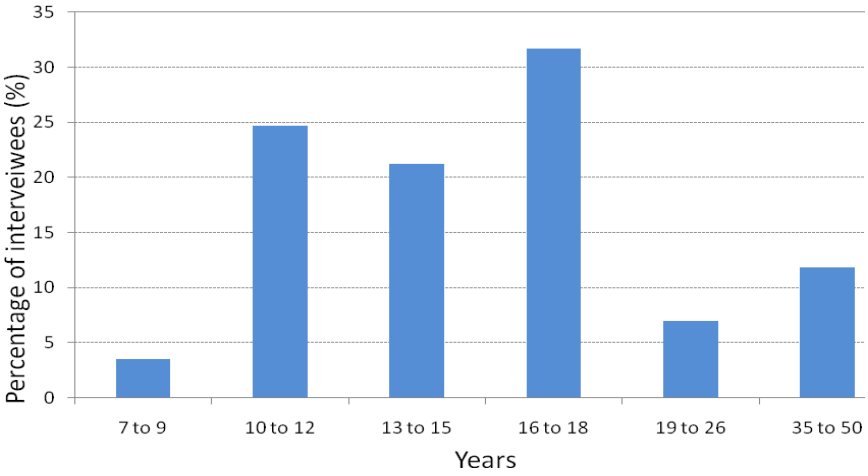

Fig 3 Age distribution of interviewees

Table 2- General opinion of children about aspects of the building

	Pedestrian access to the building	Access for physically disabled	Exit routes in case of emergency	Fire safety	Security against intruders	Position of recreational facility	Provision of beds or sleeping mats
Poor [%]	4	16	28	28	0	8	0
Good [%]	96	84	72	72	100	92	100

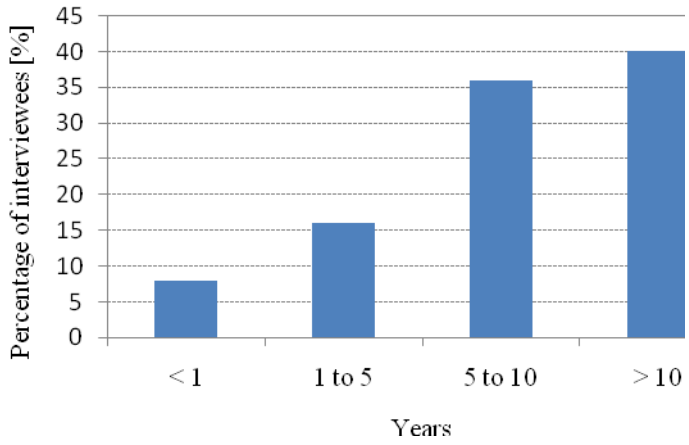

Fig 4 Length of stay at the facility

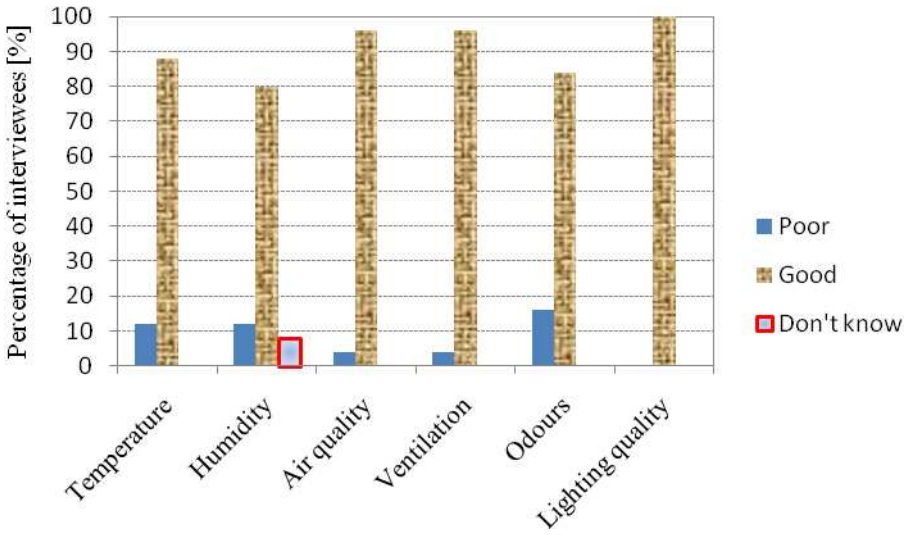

Fig 5 Perception of thermal and visual environment

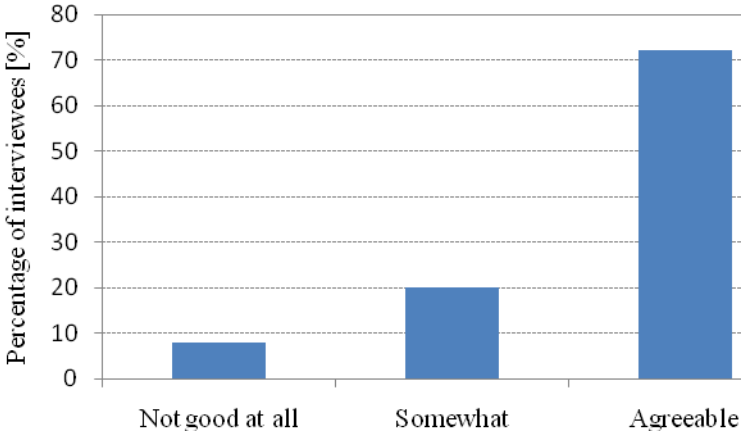

Fig 6 General perception of environment

(Where agreeable means environment is safe and good, somewhat means the environment is not very good, there are some things lacking).

Table 3-Childrens' view about features of the facility

	Composition of recreational facility	Size of recreational facility	External appearance of building	Number of w/c and showers available	Cleanliness of common areas of building	Comfort based on the orientation of buildings	Water quality
Poor [%]	4	0	0	8	8	4	0
Good [%]	96	100	100	92	92	96	100

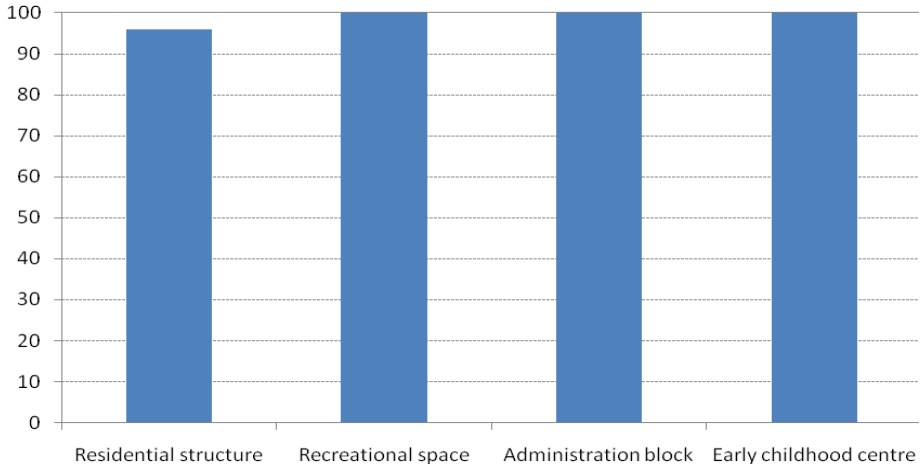

Fig 7 Positive percentage [%] votes on the condition (good) of available structures

This was restricted to the physical conditions of the various structures. Example, windows and doors were intact, the buildings had been painted not long ago, no part of the building was damaged etc.

Table 4- Childrens' opinions about the quality of available space

Parameter	Poor [%]	Good [%]	Total [%]
Sleeping spaces	0	100	100
Size and arrangement of beds within your sleeping space	8	92	100
Space around bed	12	88	100
Number of children within one sleeping area	8	92	100
Privacy within your sleeping space	52	48	100
Recreational space	8	92	100
Bathroom spaces	12	88	100
Eating spaces	8	92	100

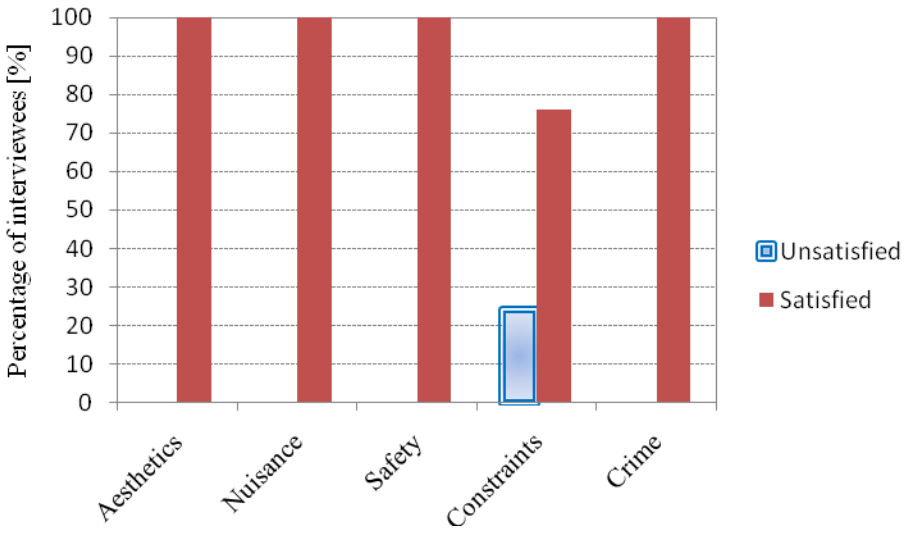

Fig 8 Vote on feelings about the physical environment

Here, constraints referred to how the children were restricted or free to go out of the home for specific purposes).

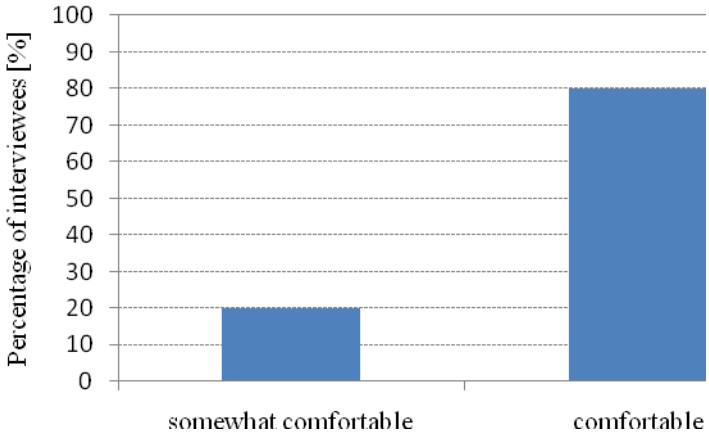

Fig 9 Overall assessment on the performance of the environment

Somewhat comfortable refers to the children just being Okay but there is more room for improvement.

Fig 10 Diagram showing the conceptual site planning

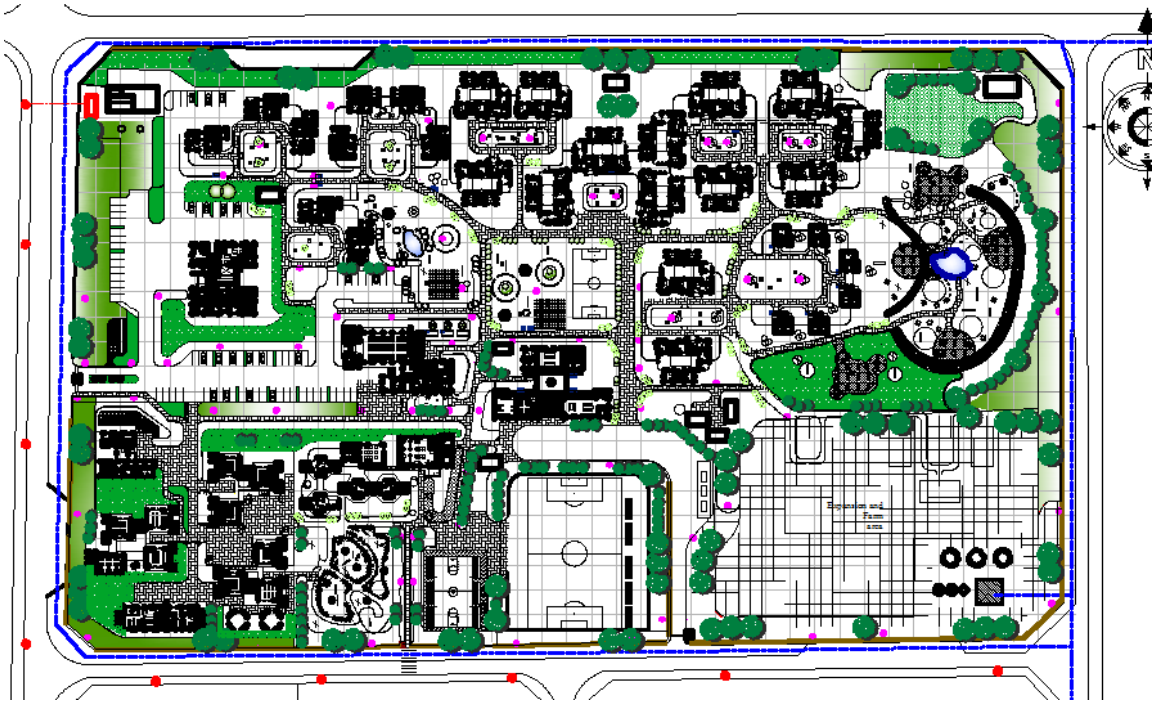

Fig 11 Diagram showing the site layout

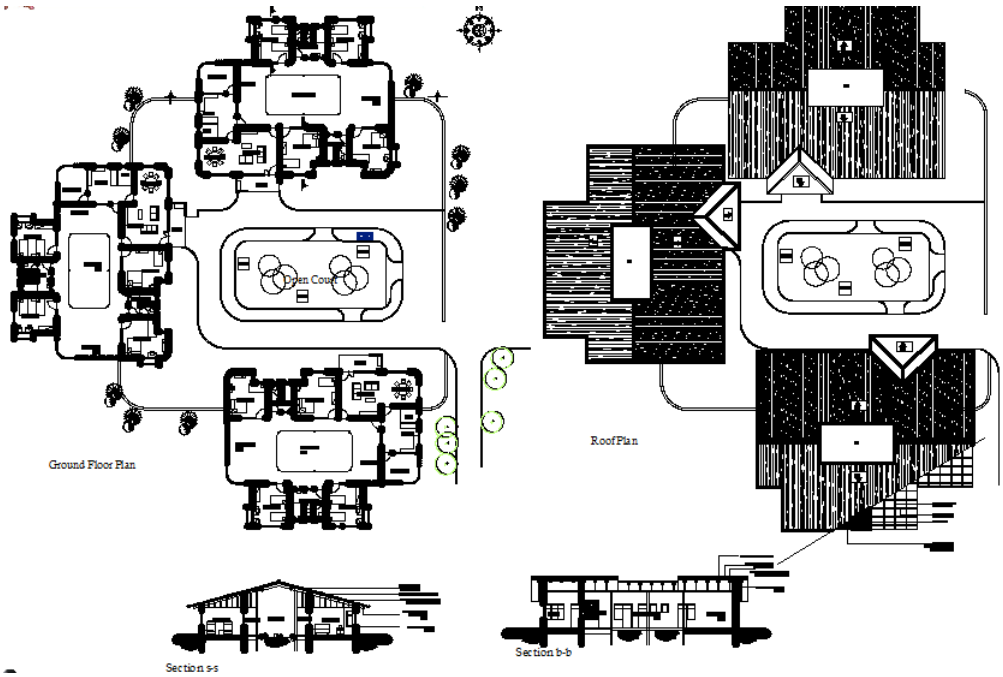

Fig 12 A graphical representation of a cluster of Childrens' home

Fig 13 Elevations of the Childrens' home

DISCUSSION

According to [6], the first stage of child development is to build trust without completely eliminating the capacity for mistrust. At this stage, if the child is exposed to a properly designed interior space with the appropriate furniture and appearance, it gives the child a sense of attachment. Because the child feels satisfied, he/she tends to trust the environment where he/she has been introduced to. Further, children should be able to develop independently without a lot of restrictions from the parents or care-givers. In order to let the child develop well without too many restrictions, the built environment should be developed to accommodate children both within the indoor and outdoor spaces where parents can keep close supervision and help the children to explore and develop that autonomous nature. This also tends to boost the confidence of the child, which further leads to children being able to learn how to take initiative and react positively to the world's challenges, taking on responsibilities, learning new skills and feeling purposeful.

In all, 85 persons from the Kumasi Childrens' Home were interviewed to study their responses to environmental factors. 31.8% of the interviewees were male and 68.2 % female (Fig. 2). The age distribution of the occupants showed majority of the children (85%) between the ages of 10 and 18 years (Fig. 3). In addition, over 75% of the children interviewed had lived in the orphanage for more than 5 years and could therefore give a good response on the perception of prevailing environmental factors (Fig.4).

The evaluation of the thermal and visual environment resulted in a mean value of 91% of the occupants giving a good vote. Coherently, the vote on temperature and relative humidity were 88% and 80% with 12% of the interviewees saying the two environmental parameters were poor. The percentage of occupants who did not know the effects of humidity on their thermal environment was 8 (Fig. 5). Air quality, ventilation and lighting quality scored over 96% votes. Odour was voted by 16% of the respondents to be poor. The environmental parameters are related to the operation of installed building systems [7]. This calls for efficient, flexible, and diverse environmental system controls to aid in satisfaction and comfort in the buildings as the attainment of a good indoor climate is paramount since people spend about 80% of their time in homes or offices [8-14] have shown that outdoor temperature as well as windows and shades operation has effects on the thermal and visual performance of buildings.

The general perception of the Childrens' Home environment was voted by 72% of the interviewees to be agreeable, whilst 20% said it was somewhat agreeable and 8% voting their environment to be poor (Fig. 6). A poor environment has been linked to unsatisfactory development in children. A high infant mortality and a rapid intellectual deterioration have been reported by [15-8] and [19] have demonstrated that many of the cognitive and social deficits among children raised in poor surroundings were ameliorated after improvements in their environment. All of the studies showed that simple changes, even within the orphanage environment (e.g., lowering child-caregiver ratios, providing perceptual stimulation) resulted in increases in Childrens' intelligence quotient scores. One recent study found that the effects of quality care persisted even into adulthood [20]. This therefore suggests that within the Childrens' home environment, there should be a centre where kids are nurtured and helped to develop skills that will shape their lives forever [21].

The general opinion about aspects of the building is illustrated in Table 1. Security against intruders and provision of beds was each voted 100% as good. The lowest votes were 72% for exit routes in case of emergency and fire safety. 28% of the children found exit routes in case of emergency and fire safety to be poor. This was the second highest negative vote recorded throughout the exercise. Even though the whole area is walled and the periphery land is not built (see Fig. 1), fencing around outdoor play spaces is an important safety and security measure [21]. In Table 2, the number of children who found the available sanitary facilities to be good was 92%. Comfort based on the orientation of the buildings was also voted positive. These high votes were rather in disagreement with standards and sustainable design principles of form and orientation. The elongated buildings of the dormitories have an east-west orientation (see Fig. 1), which leads to high thermal loads and energy performance, as well as discomfort [22].

The condition of available structures on the site was found to be good. The least vote in relation to the structures was 96%. This was in line with the researcher's observation. On the quality of available spaces, a positive vote (good) was recorded. The only surprise was 92% of the respondents finding the number of children within one sleeping area to be good whilst 52% said privacy within sleeping spaces was poor (see Table 3). This may be due to the fact that their care-givers have instructed them not to always say good things about the home. The result (table 3) indicates the Childrens' desire to have an enclosed area of their own which could be connected to common spaces for interaction. This spatial strategy of private, semi-private and public zones is generally recommended by child development theorists. Group or dormitory arrangements could have a positive effect on social development but have other negative impacts. [23] found that children who were cared for in a group were more inattentive, passive, and participated less in group activities at school than did their family-reared peers. In general, institution-reared children typically display more behavioural problems than home-reared children. [24] also reported in his study on children in England that institution Childrens' IQs were slightly lower than the IQs of working class children, and their language was slightly delayed, but their social development was normal.

The vote on the physical environment received a satisfactory result (Fig. 8). An exception was on constraints (referred to how the children were restricted or free to go out of the home for specific purposes), where 24% of the children were not satisfied. However, 80% of the interviewees described their environment to be comfortable. A large classroom space (study) allows more programmatic flexibility, provides space for children to engage in concurrent quiet and active play, and decreases aggressive behaviour [25]. It is also important that educational spaces have a high degree of spatial differentiation [26]. Activity areas may be separated by physical objects such as movable partitions and cabinets or by visual cues such as different flooring materials, wall colours, and changes in

lighting and ceiling or floor height [27]. Such distinct and well-defined boundaries support social interaction, encourage exploratory behaviour, and prevent interruption of ongoing play.

Recent recommendations by the United Nations Committee on the Rights of the Child [28] on the standard of environment of Childrens' home state that children should live in safe, pleasant accommodation facilities, sufficient spaces should be provided to meet their needs and that they should not be isolated from the community. Besides, the home should have a family atmosphere and not an institutional one.

The lessons learned from the case studies and the Childrens' opinion about their environment was used as parameters in the proposal of a Childrens' Home in Yendi (Northern Region of Ghana) (see Figs. 10 to 13). The proposed project serves to encourage high quality design of public space, buildings and infrastructure as well as providing residents of Yendi with a healthy and comfortable environment. It further improves the quality of the area and would serve as a standard in the future development of the town. In so doing, the principles of sustainable development, which are based on developing the qualities of local environments, have been enforced. Thus, sustainable development and improvement in the quality of life through a well planned environment is ensured [29].

Lessons drawn from study (literature)
That the family-based system of caring for children in orphanages where the children to care –giver ratio is appreciable presents a much better way of training children than the institutionalized (dormitory) type.

[30] found that the institutionalized children, even in adolescence, were delayed intellectually relative to children in foster care, displayed significantly greater problem behaviours, were socially less mature and appeared emotionally removed in terms of their capacity to form relationships. [30] claimed that early institutional rearing resulted in developmental deficits that were not overcome once children were placed in more stimulating and loving environments. He clearly stated that, given his findings, "babies should be kept out of institutions"

Again, there should be more open spaces for the children to be able to make use of physical activity affordance. Natural spaces spontaneously stimulate high levels of physically active play in children, for instance running in open areas with shifting topography [31]. [32] suggests that simply being outdoor is the strongest predictor of physical activity in young children. [33] illustrate how a diverse natural landscape encourages diverse physical movement in Childrens' play:

Balancing, chasing, climbing, crawling, dodging, hanging, hopping, jumping, leaping, rocking, rolling, running, sliding, spinning, squirming, swinging, tumbling, twirling, twisting were all part of Childrens' movements in a natural playground.

Again, there should good interaction between the care-givers and the children in the home. Also there should be sufficient wash facilities and toilets for the children and should not be in a deplorable state. The guideline of one toilet and a shower for every seven children must be followed [33].

In terms of the thermal and visual environment, the window to wall ratio should be increased in order to ensure that naturally, these element are enough, otherwise they can be artificially enhanced.

Access for the physically challenged should be available and in good condition. There should be ramps which should be wheel chair accessible as well as doors, beds and corridor widths.

CONCLUSION

Through case studies and interviews, Childrens' perception of the built environment quality in an orphanage was studied. Conclusions were drawn which influenced the design proposal of a Childrens' home in the Northern Region of Ghana. The results from the interviews showed a positive perception towards their environment as well as a high satisfaction with the available services on the part of the children. From the study, the children perceived their environment to be a home where their basic needs are met. Some of the children however felt that their environment could be enhanced to cater for a lot more of their recreational needs. However, the researcher's observation was that some of the aspects of the built environment rated positive (good) by the children could not be justified. This could therefore form a basis for another study. For instance, all the thermal and visual environmental parameters (with the exception of lighting quality) were observed to be poor. Further, the available sanitary facilities, comfort based on the orientation of the buildings, spaces around beds, number of children in a room and the quality of dining and study spaces were found to be in need of improvement. All the aspects of the interviews were nevertheless in line with the Childrens' perception (good or satisfying).

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