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Effects of Educational Buildings in Residential Areas on the Surroundings

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Abstract: ***The presence of educational buildings in residential areas significantly impacts the surrounding environment, impacting social, infrastructural, and environmental aspects. This research explores the effects of educational institutions on residential neighbourhoods by examining both the benefits and challenges associated with their integration. Educational buildings contribute positively to urban communities by bringing in a sense of security, enhancing property values, and encouraging economic activity through local businesses that cater to students and faculty [1], [9]. Additionally, they provide convenience for teachers, students, and staff in terms of proximity and accessibility to their houses, reducing travel time and promoting community engagement [3].***

However, several challenges arise due to the presence of educational buildings amongst residential areas. Increased traffic congestion, noise pollution, and parking shortages during peak hours and school events often lead to conflicts between institutions and local residents [10]. Furthermore, the lack of basic amenities such as bookstores, print shops, and cafes near educational buildings adds inconvenience for students and staff [11]. Another pressing issue is the inability of educational institutions to expand due to lack of spatial, as residents may be against the land acquisition for institutional growth [6]. Additionally, zoning laws and urban planning policies may not always align with the needs of both educational institutions and residential communities, leading to disputes and challenges [5].

This research utilises qualitative and quantitative methodologies, including case studies and surveys, to analyse these effects. This paper synthesises existing literature to provide an understanding of the consequences of educational buildings on their residential environments.

Keywords: Educational Buildings, Residential Areas, Surroundings, Social Impact, Noise Pollution, Traffic Congestion, Community Dynamics.

I. INTRODUCTION

Educational buildings, comprising schools, colleges, universities, and other learning institutions, hold a unique position within the urban landscape. They not only serve as centres that impart knowledge but also play a pivotal role in shaping the surrounding residential environments [1], [6]. The interplay between educational buildings and their residential surroundings is a subject of growing importance in contemporary urban planning and development [9].

In today's rapidly urbanising world, the coexistence of educational institutions and residential neighbourhoods has become increasingly prevalent. Schools are nestled among homes, and universities become integral parts of cities [5]. This cohabitation has been found ideal for the residents who live in close to these institutions [10].

The goal of this study is to examine and analyse the dynamics at play when educational buildings become neighbours to residential communities. Such dynamics include a wide array of aspects, including the social, educational, and environmental effects that ripple through these neighbourhoods [11]. Through systematic inquiry and analysis, we seek to shed light on both the positive contributions and potential challenges caused by educational buildings in residential settings [12].

The significance of this research extends to several critical dimensions:

1) *Urban Planning and Design:* The spatial integration of educational buildings within residential areas necessitates thoughtful urban planning and design strategies. Balancing the educational mission of these institutions with the needs and desires of the surrounding community is a complex task that requires careful consideration [1], [2].
2) *Social and Educational Outcomes:* Proximity to educational buildings can influence a range of social outcomes, from unity among the community to gaining education. Understanding these effects is important for the neighbourhoods [3], [4].

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II. OBJECTIVES

The primary objective of this research is to analyse the effects of educational buildings in residential areas on their surroundings. This study aims to examine both the positive and negative impacts of educational institutions on urban neighbourhoods from social, environmental, and infrastructural perspectives. The specific objectives of this research are:

1) To evaluate the social impact of educational buildings on residential areas, including aspects such as community engagement, neighbourhood relations, and safety.
2) To examine the infrastructural and urban planning challenges, such as zoning restrictions, parking issues, and space limitations for institutional expansion.
3) To identify the perspectives of key stakeholders, including residents, students, teachers, and urban planners, regarding the advantages and drawbacks of educational institutions in residential areas.

III.RESEARCH METHODOLOGY

Collecting data from the neighbourhood can be divided into two categories, i.e., by observing the surroundings or by a questionnaire. The questionnaire is answered by the people residing in the neighbourhood around the schools or colleges. In this questionnaire, questions were asked regarding the issues faced in residing near an educational building. Answering this questionnaire will help in getting information about effects of the location of the building. The physical observation was made during the peak hours, i.e., when the school starts and finishes, when the buses move and parents pick their kids; during the breaks as well. An interview was conducted to understand the problems faced by the users. An observational study is also made to understand the pedestrian and vehicular traffic in the peak hours. All the data are compared and compiled together to fulfil the purpose of this paper.

IV.LITERATURE REVIEW

Educational buildings, play a vital role in residential areas by providing essential services and shaping the local environment [1], [6]. The influence of educational institutions on their surroundings has long been a subject of interest among urban planners, architects, educators, and policymakers [5], [9]. This literature review aims to examine existing research on the multifaceted effects of educational buildings in residential areas on the surrounding built and natural environment.

A. Urban Planning and Educational Buildings

Urban planning and design are crucial factors in determining the location and impact of educational buildings within residential neighbourhoods. The work of urban planning theorists like Jane Jacobs (1961) emphasises the importance of integrating these institutions harmoniously into the urban fabric to create vibrant, walkable communities [1]. Proper site selection, transportation planning, and architectural design are central to pacify potential negative impacts. The presence of an institution also effects the development of the surroundings, such as development of more residences, shops, etc. The spatial integration of educational buildings within residential areas requires thoughtful urban planning and design strategies [2]. Balancing the educational mission of these institutions with the requirements of the surrounding community is a complex task that needs careful consideration. There is also increase in land value of the surroundings. Since these buildings are located in residential areas, commute by walking or cycling is encourages physical activity and sustainable urban planning.

B. Social and Educational Effects

The presence of educational institutions can have significant social and educational effects on residential communities. Research by James S. Coleman (1966) highlighted the role of schools in shaping student outcomes and community dynamics. Proximity to quality educational facilities is often associated with improved educational attainment, leading to better prospects for residents as its location is easily accessible and the children in that neighbourhood can easily reach the institution and will not waste time traveling [3]. Schools can assist in social integration, but issues like socioeconomic segregation within schools can hinder this process. Additionally, the extent to which schools promote integration depends on the involvement of parents and school-community partnerships.

C. Zoning and Land Use Policies

Zoning and land use policies play a pivotal role in determining the impact of educational buildings on residential surroundings. Scholarly work by Jerold Kayden (2000) and Emily Talen (2005) underscores the significance of zoning codes and policies in shaping the physical and social characteristics of neighbourhoods and their interactions with educational development [5], [6].

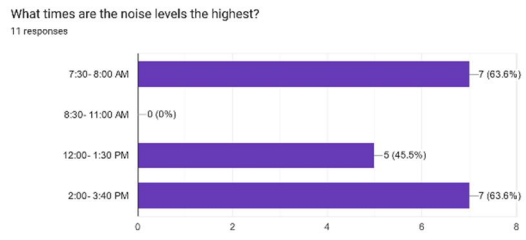
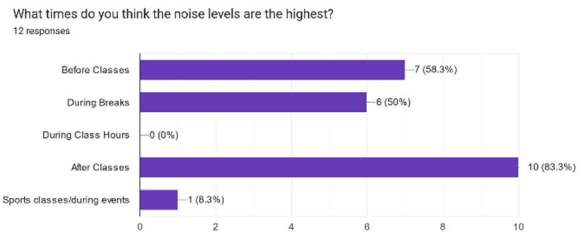
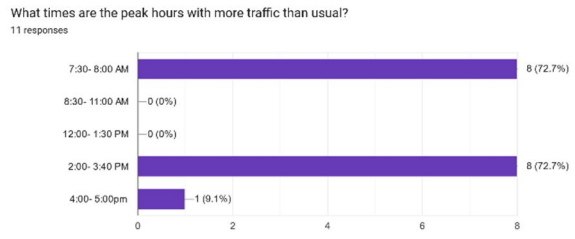
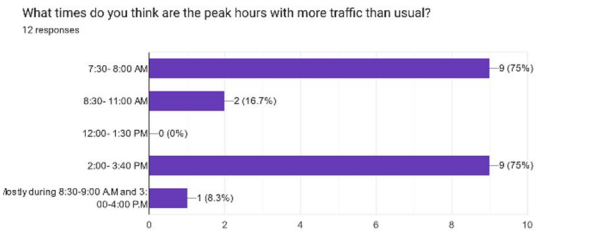
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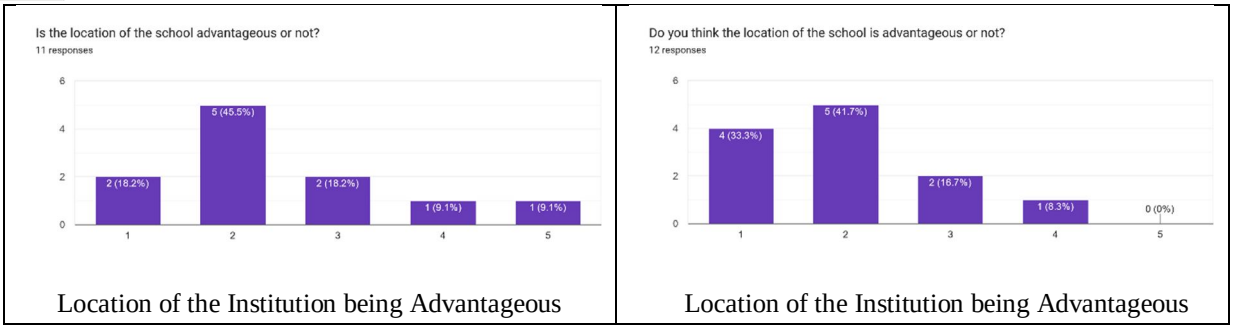
D. Community Dynamics and Well-being

Educational buildings often act as community hubs, encouraging social engagement and capital (Putnam, 2000) [7]. They serve as venues for community gatherings, educational programs, and cultural events, contributing to the overall liveliness of residential areas (Chaskin & Joseph, 2015) [8]. Educational institutions may enhance the perceived safety and security of a neighbourhood by attracting families and increasing daytime activity, potentially discouraging criminal activity. The literature on the effects of educational buildings in residential areas on the surrounding environment is extensive and diverse. It comprises of urban planning, social and educational dynamics, environmental considerations, economic effects, and regulatory frameworks. While some studies demonstrate positive outcomes, others highlight potential challenges and negative consequences. Understanding these complexities is essential for policymakers, urban planners, and architects seeking to create sustainable and vibrant residential communities that effectively incorporate educational buildings while minimising adverse impacts on the surroundings. Further research is necessary to address gaps in knowledge and develop strategies for the integration of educational buildings within residential neighbourhoods. This research is crucial for promoting educational excellence and enhancing the overall quality of life for residents living in proximity to these institutions.

V. PRIMARY DATA ANALYSIS

A questionnaire was sent out to collect the primary data. The goal of the questionnaire was to understand how these institutions were affecting the surrounding areas in the perspective of the residents and the students as well. Based on responses given, the institution is moderately loud generally, 7:30- 8:00 AM and 2:00- 3:40 PM, i.e., the times before and after classes are the noisiest times and are also the peak traffic hours. The residents do not find the sounds of kids playing during the breaks unpleasant, but not very pleasant either. Many people feel that the location of the institution is advantageous, while very few residents find it disadvantageous. One of the main advantages that most of them felt was that the location helps the students to reach the schools or colleges easily, and is time saving as it is easily accessible, due to these institutions, there could be development of the area such as hospitals, it is also a quiet area which does not cause any disturbance for the students during classes. One of the main disadvantages if that of traffic due to narrow roads, it also disturbs the neighbours. Based on the responses submitted, though the location is a positive factor as it makes it easily accessible for the students, it also causes disturbance to the neighbours due to the noise and the traffic. Based on the observations made by physically visiting these institutions, it can be deterred that the location is indeed a positive factor in terms of accessibility, it does pose a problem in terms of traffic, since the roads are narrow as they are designed for residences and not institutions. There are presence of a lot of cafes and eateries which are visited by the students during the breaks or after college. These are also located in these narrow roads, the crowding of students in front of these shops causes more traffic problems.

Neighbour's Perspective	Student's Perspective
	
Noisiest Time	Noisiest Time
	
Traffic Peak Hours	Traffic Peak Hours



Location of the Institution being Advantageous | Location of the Institution being Advantageous

Fig. 1 Bar Charts from the Google Forms Questionnaire.

Based on the data collected, many people feel that there is a lot of traffic and noise issues present due to the schools, but they feel that the location can also be an advantage as the children staying close to the institution can commute easily, and it will not be time-consuming as well. Staying close to the institution encourages commute through walking, cycling, which encourages physical activity in this age of a digital world where the children are playing on gadgets more than playing outdoors.

Interview with a student who graduated from Little Flower Public School, Hosakerehalli, Bangalore:

During an interview conducted for this research paper on the effects of educational buildings in residential areas, the interviewee highlighted several advantages of having educational institutions situated within residential neighbourhoods. He noted that the environment was notably quieter compared to main roads, creating a serene atmosphere conducive to learning and living. Additionally, being away from the hustle and bustle of main roads made it more convenient for students to walk around the campus after school hours, catching up with friends safely. The interviewee also emphasized the ease with which teachers and students could find housing close to the educational institution, reducing commute times and enhancing work-life balance. Moreover, he mentioned that the presence of the institution contributed to a sense of safety and security within the neighbourhood. However, the interviewee also raised concerns regarding the negative aspects of having educational buildings in residential areas.

He indicated that residents often voiced complaints about issues such as noise and disruptions caused by educational activities. Furthermore, the lack of parking space during events like parent-teacher meetings was identified as a significant inconvenience for both residents and visitors. The interviewee also mentioned that the campus's inability to expand due to residents' reluctance to part with land posed challenges for the institution's growth. Finally, he noted the absence of nearby basic amenities such as print shops, hotels, or stationery stores, requiring residents and visitors to travel further for essential services. These insights provided valuable perspectives on the complex dynamics between educational buildings and residential surroundings, underscoring the need for careful consideration of both the benefits and drawbacks in urban planning and development initiatives.



Fig. 2 Little Flower Public School, Hosakerehalli, Bangalore.

Based on a few observations in the neighbourhood of HSR Layout, Bangalore, where institutions such as Euro School, HSR and NIFT College are located, it can be seen that there is overcrowding of vehicles during the morning times on a daily basis. On Street 2, many parents dropping off their children is observed, some of the parents of the students in lower grades can also been seen parking their vehicles near the school gates, or in front of any nearby residences to drop their kids to their class. This can cause a blockage of traffic or inconvenience to the neighbours.

The same can be observed in the evenings as well when the parents pick their kids after school. During the evenings, another factor that gets added is that the school buses are parked on the street along the compound wall of the school, as there is not enough parking space provided for the school buses in the campus. Moreover, the students taking the school bus can be seen wandering on the street to get in their respective bus, this not only increases the traffic issues, but also raises the safety concern of the students as many times vehicles on this road are over speeding, or the drivers don't expect many kids on the street and don't slow down.

Similar instances can be observed on Street 1 as well, where there are many autos dropping off and picking up the students to college, where many of these autos are parked in the wrong lane too while dropping off or picking up their passengers. There are many cafes nearby where the students can be found standing in huge groups in the middle of the narrow street, which is also a junction blocking the traffic. Many of them park their vehicles near the cafes, or along the street near the entrance of the campus, making it difficult for two-way movement of vehicles, in turn increasing traffic.



Fig. 3 Street 1: NIFT College, HSR Layout Bangalore.



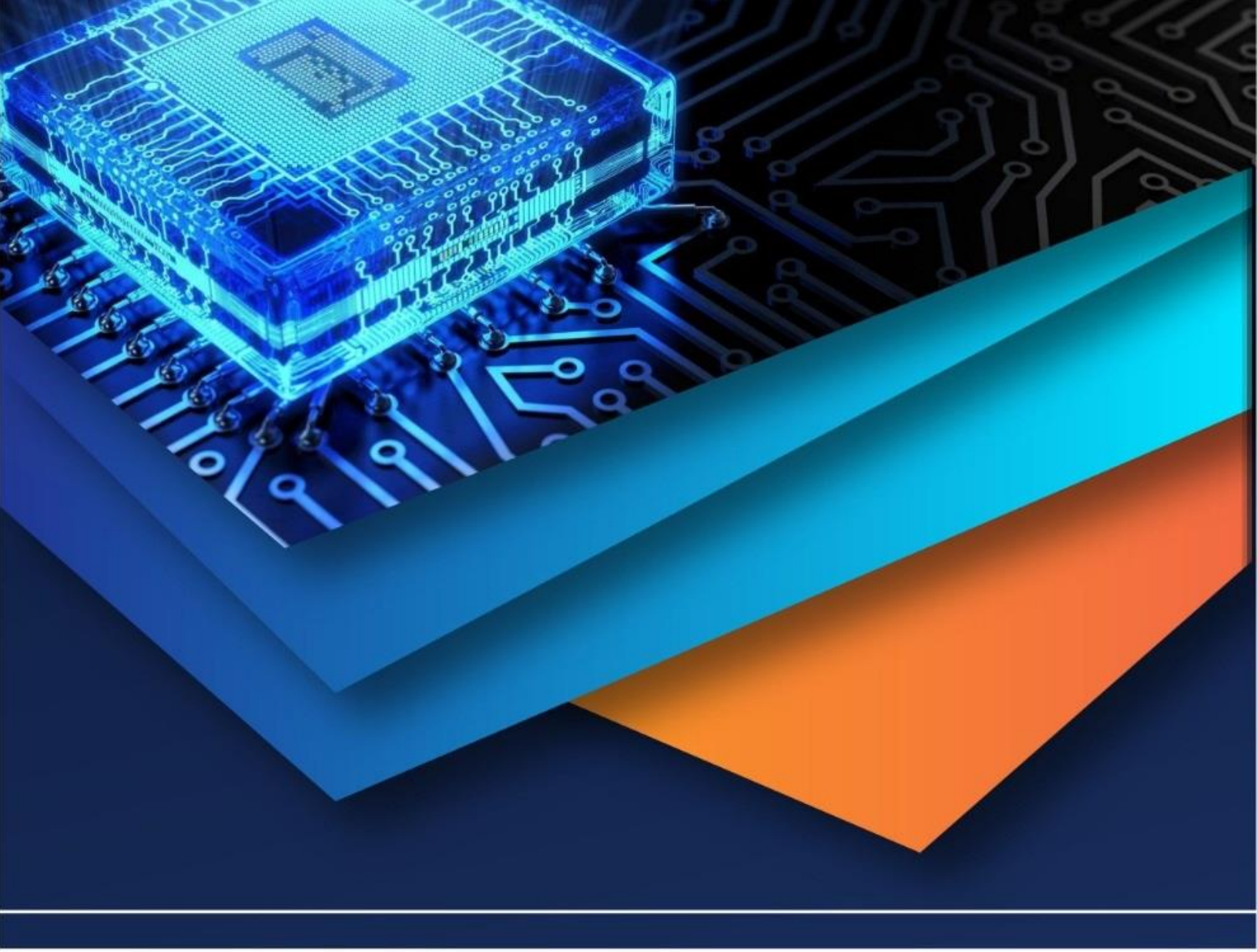
Fig. 4 Street 2: Euro School, HSR Layout, Bangalore.

VI. CONCLUSION

Based on the obtained data, we can conclude that despite having problems such as traffic and noise during the mornings and evenings, it could be fixed by designing educational buildings in a way to avoid these problems. It is clear that one of the main issues is the lack of parking space provided by these institutions. Many of them don't have enough space to park their own bus and it can be observed that these buses are parked along nearby roads. These buildings must try to provide some sort of parking space for the vehicles. They can try and use that space as a play area during the school hours as there are not many vehicles and need the space before and after the school hours. They could also have a bell-mouth entry for the parents dropping off their kids without the need to park the car. The institutions could provide parking spaces for the parents' vehicles either as underground parking or multi-level parking due to the lack of space. The students could also try opting for public transportation or car- pooling in order to avoid congestion of the roads during peak hours. There are advantages to these buildings being located in residential areas as well. They can easily be accessible by the students and the staff, thereby saving the traveling time of students and the staff. There could also be a provision of green spaces which would act as a buffer space and reduce the noise. The trees could also absorb the noise, thereby reducing the amount of noise effecting the neighbours. The location can be considered as a huge advantage, if these buildings are designed differently, considering the traffic congestion that could be caused by them, and solve this problem, even the residents wouldn't have any problems with these institutions and the purpose of the building in that location is served without affecting anybody.

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