# An Evaluation of Users' Contentment Regarding Movement Facilities of a School Building in Karachi, Pakistan

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***Abstract-****This study's goal is to demonstrate that there is a connection between the comfort and performance of users and the mobility amenities available to them. The research was conducted at the Government Girls Primary School (GGPS) & Higher Secondary School (GGHSS), which is located in Block 6, Gulshan-e-Iqbal, Karachi, Pakistan (Semis Code No. 408080120). Quantitative and qualitative methods were utilized in the process of data collection and analysis respectively. As part of the quantitative method, questionnaires were used to collect information from participants. During the qualitative approach, we observed the teaching personnel (academic staff) and support staff via site visits,*

*pictures, and architectural renderings. These observations were made as part of the data collection process. The study's results showed that Employee performance and movement facilities were positively correlated. It was discovered that the structure lacked adequate entrances, exits, and emergency access from the school's main entrance from heavily populated areas, from classrooms, and from the top floor through corridors, staircases, ramps, and lifts.Additionally, there was no ramp or stairway for emergency vehicles to use to access the upper level, classrooms, or built-up areas. There was neither an elevator(lift) nor a ramp available.*

*According to the findings of the study, there are multiple aspects of the GGPS-GGHSS in Karachi that need to be improved in order to provide adequate movement facilities for all users and, more importantly, for persons who are physically disabled.*

***Keywords-****Educational Building,Movement Facilities, School, UsersContentment, Building Assessment*

## I. INTRODUCTION

The key to economic growth in the twenty-first century is improved education. Each individual and every aspect of society are impacted by this social reform tool. Formal education is delivered by social institutions including schools, colleges, and universities. The growth of human potential and the expansion of economic capacity depend on social knowledge, competence, and creative activity [1].Numerous academic studies back up the idea of funding early children's growth. According to studies in psychology and cognition, learning is more straightforward when one is young than when one gets older [2, 3, 4]. A pre-primary school, preschool, nursery school, or kindergarten is a type of educational setting that offers early childhood education to pupils, often between the ages of three and five, before the start of primary school's required curriculum. Preschool is where the majority of pupils go before starting first grade. Several middle-income countries have enacted universal pre-primary education to give childrena better start in life [5, 6]. According to research, primary school is crucial for increasing economic and agricultural output. The improvement in health as well as declines in fertility, infant mortality, and morbidity rates, have all been proven to be strongly connected with education, especially among girls. As a result, education is viewed as beneficial from an economic and social standpoint [7, 8, 9].

Students should have access to sufficient quantities of top-notch textbooks, instructional resources, and other educational resources [10]. Inadequate school facilities significantly negatively impact teachers' motivation, negatively impactingstudents' academic performance [11]. Facilities are the methods by which successful outcomes can be attained. Facilities are essential to the accomplishment of educational goals.School facilitiesimpact teacher retention, attendance, and student achievement [12].

In the past, schools were scrutinized more for their physical appearance, structural design, use of environmentally friendly building materials, methods for preventing air and water pollution, and waste management techniques than for how well they met one of their users' most crucial needs: movement facilities. These criteria could cover a range of things, with comfort being the most vital. The users of schools today are more interested in schools that offer opportunities for movement. School facilities are consideredessential to teaching staff (academic staff) and support staff (general staff). Academic staff includes faculty, and available staff includes administrators, deans, counselors, cashiers, assistants, security guards, servants, gardeners, guards, cleaners, etc.Sustainability depends on the resources a school supplies, including the facilities for movement. Users who want to be able to travel around the school without difficulty are interested in the movement facilities.Examples of mobility facilities include entrances and exits (from the main entrance, from built-up regions, from classrooms, and the upper floor in the form of a staircase and ramp), corridors, stairs, ramps, and lifts.

The largest and most populous metropolis in Pakistan and the seventh largest in the world is Karachi, the capital of the Sindh province. It serves as Pakistan's primary industrial, financial, and transportation center. The "City of Lights" and "The Bride of Cities" are other names for Karachi, a city on the Arabian Sea[13].

Numerous schools in the city benefit the pupils. The user's comfort level ultimately determines the charm of a school, which can be based on various elements. The current study examined the school's amenities from a mobility standpoint. Entrances and exits, including emergency exits from the main entrance of the building, from built-up areas, from classrooms, and the top floor in the form of a stairway and ramp, are the critical frontline support for comfort among all the particular facilities of a school. The facilities' usefulness is doubtless if people cannot use them.

In one of the most densely populated urbanized zones in Pakistan, Block 6, Gulshan-e-Iqbal, Karachi (Semis Code No. 408080120), Pakistan, is home to the GGPS-GGHSS, which attempts to offer educational opportunities to the neighborhood. As a vital school for the city, several user facilities must be assessed to ensure best practices benefit users. The study intends to examine the less common movement facilities at the GGPS-GGHSS, Karachi. It plans to evaluate these amenities and make improvements for the users.

For this study, the following limitations were noted:

- The study was focused only on selected school facilities, such as movement facilitiesat GGPS-GGHSS, Karachi. It delineates the learning environment assessment and the organizational climate description.

- Only staff members—teaching staff and support staff—from this school were selected to participate in this research study, as they are regular and experienced users. It makes it difficult for regular primary school students, ages 5 to 11, to understand the movement facilities. It delimits the school visitors, as their movement and usage are minimal.

## II. LITERATURE REVIEW

Every kid is considered to have the right to an education, which is viewed as a tool for social change that affects every aspect of an individual and a community, regardless of race, sex, region, or religion. It is crucial for a nation's advancement, directly affects a country's economic prosperity, and is essential for a child's psychological development. Awareness, knowledge, and social innovation contribute to human capacity development and accelerate economic progress. Formal education is provided by social institutions such as schools, colleges, and universities [1].The most effective tool you can employ to alter the world is education, which has been discovered [14].Pre-primary education is referred to be the initial stage of organized teaching. It is used as a bridge between the home and the classroom to introduce young children to a setting similar to a school. At the beginning of primary school, pre-primary education is associated with increased reading and math proficiency. Still, by the conclusion of the first grade, these associations are no longer present.

Additionally, they learn that preschool attendance is associated with higher levels of behavioral disorders when preschools are not located in public schools [15]. It has been shown that primary education increases income and eradicates poverty [1]. Children between the ages of five and nine are considered to be in primary schooling[16].Primary education refers to educating young children under eleven[17].In developing countries, primary education is seen as one of the essential tools for fostering economic development and raising living standards[18]. However, primary education will likely improve when new information and the proper technical training are included in this level's curriculum. A widely acknowledged objective in the fight against poverty is increasing access to primary education [19]. The initial phase of compulsory education provides pupils with academic foundations and is viewed as a fundamental Human right.

Children must have access to enough high-quality textbooks, teaching aids, and other school materials [10]. The school's lack of resources has a detrimental impact on staff and student motivation. A decent learning environment and appropriate facilities considerably increase teachers' motivation and pupils' success [20].Insufficient educational facilities harm student achievement [21].Some say encouraging and supportive social and physical environments can positively impact students' academic achievement [22]. Schools can improve learning for children by making improvements to their facilities[23].The study found that students' performance was significantly impacted by the accessibility of all school facilities [24]. For kids to study efficiently in the context of school facilities, the learning environment is essential. Without an appropriate and healthy environment, learning cannot be effective. It is accurate to refer to the learning environment as a third teacher[25]. Concrete encounters rather than abstract ones can help students learn. The usage of physical facilities improves the Students' learning [26].Facilities in schools support instructors' tasks and enable students to study and succeed. They also stressed how a teacher's motivation to instruct students successfully could be influenced by the availability and the use of school facilities, which positively impacts students' academic attainment. Due to their importance in raising the morale and motivation of teachers and students as well as in raising the caliber of instruction, the school's facilities—including its standardized buildings, movement facilities, and classrooms with their amenities, teaching materials, and child development tools—need to be maintained appropriately [27].

As opposed to how effectively they satisfied other crucial user demands, schools used to be evaluated more for their design, structural layout, use of sustainable building materials, air and water pollution control techniques, water and energy saving methods, and waste management systems. These requirements could include various things, with comfort being the most important. Today's users of schools are more drawn to those that offer movement facilities. Staff members value the facilities at schools. Sustainability is seen as reliant on resources, namely the movement facilities a school provides. Users are interested in movement facilities to hurry within the school.

Hallways, stairwells, ramps, and lifts are all considered part of the school's "movement facilities," along with entrances and exits, built-up spaces, classrooms, and the upper floor. As a result, it has been determined through critical analysis that it is crucial to have school facilities that serve as the primary frontline assistance and, in turn, offer user comfort.

The global standards to measure the efficiency and facilities of schools are mentioned in the Time-Saver Standards for Building Types standards. McGraw-Hill [28], Building for Everyone: A Universal Design Approach: Booklet 2 - Entrances and Horizontal Circulation [29],Building for Everyone: A Universal Design Approach: Booklet 3 – Vertical Circulation [30] andKarachi Building and Town Planning Regulations-2002 Amended Up to Date March 2017 [31].

Scholars have also mentioned that horizontal movement in educational institutions is a type of movement that can affect users' comfort. When traffic is heavy and in case of an emergency, entrances, and exits must be wide enough to allow people to access and exit the school building without difficulty. For two wheelchairs to pass each other comfortably, corridors in educational facilities need to be at least 2,000 mm wide [32]. Another notable instance is that certain times of the day are hectic in public places. For example, it is anticipated that school buildings' significantentrances and exits will be particularly busy during the morning and evening rush hours, and access and departure will be controlled during school hours. As a result, usage patterns vary at the earlier-mentioned times of the school day, and the essential movement features and paths should be created to fit users during those times [33] efficiently. The term "school corridors" refers to a particular kind of gallery or hallway that serves as a passageway connecting various portions of a structure and is often narrow relative to its length. In addition to leading to other rooms, it typically has building entrances. Aim for no more than 100 feet of separation in school corridors [34].

According to a second study on vertical movement, staircases in schools should be simple to ascend and descend, ramps for children with impairments should be built, and handrails should be robust[35]. Additionally, past studies have demonstrated that emergency staircases must be available in multi-story schools [36].Similar to how ramps are the ideal movement features to apply in the design, past studies have shown that they must be incorporated into the functional space of the educational institution in an inventive manner [32].In addition, prior studies have shown that specifically constructed wide doors that can accommodate wheelchairs are vital for education, as are schools with ramps and lifts[37].

School facilities, such as those for physical activity, can reflect a school's motivation regarding user happiness or comfort. Following a comprehensive literature analysis, these facilities highlight several factors that should be considered when designing schools to satisfy users. It has been determined that school facilities, which serve as the primary source of comfort, may also impact a school's success. Additionally, users should consider the availability of movement facilities at the school when choosing any institution. School buildings, which serve as the primary source of comfort, may likewise impact how well a school operates.These facilities have been selected for the purpose of carrying out the additional study.

## III. METHODOLOGY

The questionnaires serve as the primary data collection tool in this study, which predominantly applies a quantitative methodology to the data collection process.Additionally, it contains some qualitative data for value adds in the form of site visits, pictures, and architectural drawings that document observations. Karachi city served as the focus of the investigation's case study.As part of the secondary source, we conducted a literature review that included publications, earlier research, reports, censuses, archives, books, and personal records, as well as other items that were related to the investigation. Questions were asked, and notes were taken during site visits; images and architectural plans were also taken for further study. The standards set forth by the various pertinent sources accessible in the literature and comments were combined with the selection of facilities to create a checklist. Both data-gathering methods were processed using the facilities chosen from the defined list. The questionnaire responses were gathered, and the results were statistically processed.

### *A.Sample And Sampling Techniques*

The users included members of the teaching and support personnel. The enthusiasm with which respondents tackled the survey questions was used to guide the model selection.

Descriptive studies often employ sizable sample sizes, with the aforementioned recommendation that the model accurately represents 10%-20% of the target population. Using big sample statistics, which minimizes the potential for standard error, requires a minimum of 30 participants, so it's recommended to include at least that many in any given study's sample. Their experiences at school were being investigated.

This institution's total number of staff members, including the teaching staff & the support staff, was 38, so we chose 30 as our sample size.

### *B. Research Instruments*

Questionnaires and site visits, photographs, and architectural drawings are utilized to analyze and evaluate preexisting facilities and compile data for the research.

*C. **Collection of Data***

This research used both primary and secondary sources for its data. The preliminary information complements the case study's questionnaires and on-site observations (site visits, photographs, and architectural drawings). Between the beginning of 2022 until the end of that year, researchers made several trips to various locations. The secondary data is used to support a variety of literary materials, including books, essays, websites, newspapers, and more. A thorough on-site survey involved creating baseline drawings of the structure for data collection. It included the creation of measured drawings, explanatory and analytical drawings, explanatory drawings, and drawings of facilities that help schools fulfill their objectives.

A local case study,GGPS-GGHSS,was chosen for the study. According to Fig. 1,this institution is situated in Block 6, Gulshan-e-Iqbal, Karachi (Semis Code No. 408080120), Pakistan.The location is close to a lot of hospitals and schools. Near the school, public transit is accessible. The absence of activity in this institution suggests that the resources available to users are insufficient to provide a comfortable environment. This explains why enrollment at this school is frequently lower than at other institutions. These facilities might be able to cater to various demands if provided under user requests and requirements outlined in standards.

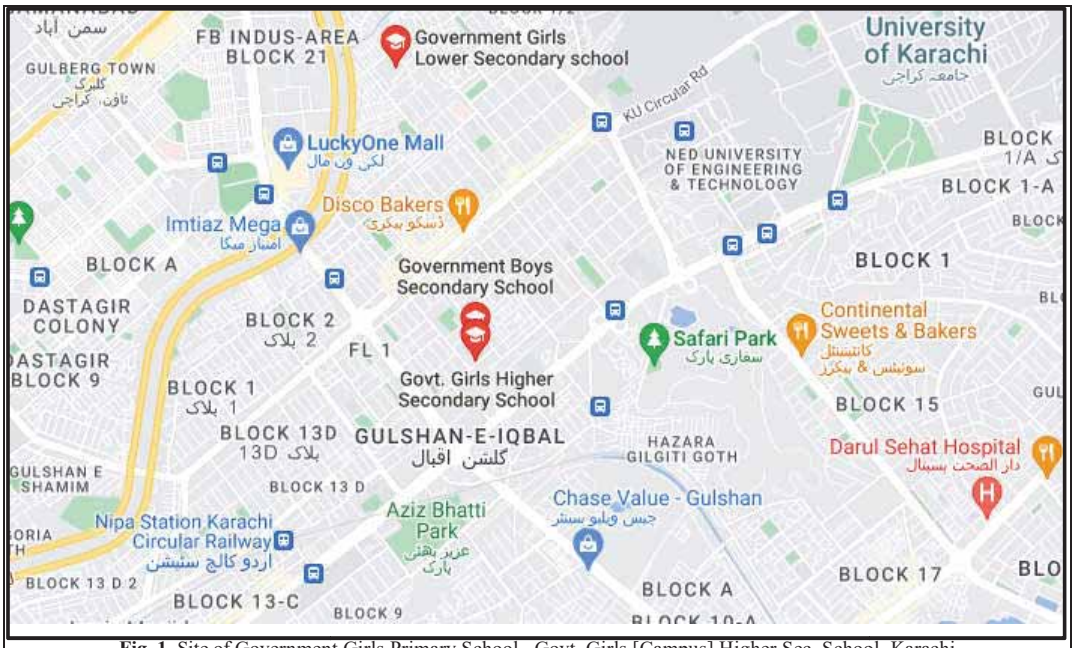


**Fig. 1.** Site of Government Girls Primary School –Govt. Girls [Campus] Higher Sec. School, Karachi showing the development connected to the land boundary

A well-known government school in Karachi, Pakistan, is the GGPS-GGHSS,depicted in Fig. 2. There are 120 students enrolled in this school's 5-year program, which ranges from 1 to 5 classes. There are also 38 staff members: teaching staff and support staff.The length of the school day is from 8:00 a.m. to 12:45 p.m.

When one arrived at the school, it had a solid mass and was composed of concrete. It has a ground floor plus one more floor. The school has sufficient outdoor play space, decent ventilation, enough natural lighting, and colorful soft boards in the corridors.

The school is in Block 6, Gulshan-e-Iqbal, Karachi (Semis Code No. 408080120), Pakistan, a densely populated metropolitan area. This study aims to clarify the significance of specific facilities for the effectiveness of

educational spaces. Based on these chosen facilities, the GGPS-GGHSSwas analyzed: It seeks to consider these amenities to enhance consumer comfort and convenience.In various locations, such as classrooms and one main entrance and exit of the school, the entrances and exits were not wide enough for horizontal circulation for user convenience. There was no way for cars to enter from there. In the corridors, the columns were recessed into the walls. The school's staircase was too narrow for vertical circulation. In case of an emergency, there was no other staircase in this school. Additionally, there was no emergency access (from enclosed spaces, classrooms, or the top floor through a stairway and ramp). There wasn't a lift or a ramp.

**Fig. 2.** Ground plus First Floor of Government Girls Primary School –Govt. Girls [Campus] Higher Sec. School, Karachi, view from the outside

People don't appear to choose this school because some minute movement occurs.This demonstrates the importance of a school's access to movement facilities.

### *D.* ***Interpretation Of Data***

The focus of the research was on the analysis, which was conducted using both quantitative and qualitative methods. The data for the study came from carefully selected instruments (questionnaires and observations), which included site visits, photographs, and architectural drawings. A statistical tool is used to examine and understand this strategy further. The survey's collected data was examined. A standard for facility comfort was set. Conclusions required analysis to be reached.

## IV. ANALYSIS AND FINDINGS

### *A. Entrances and Exits of School*

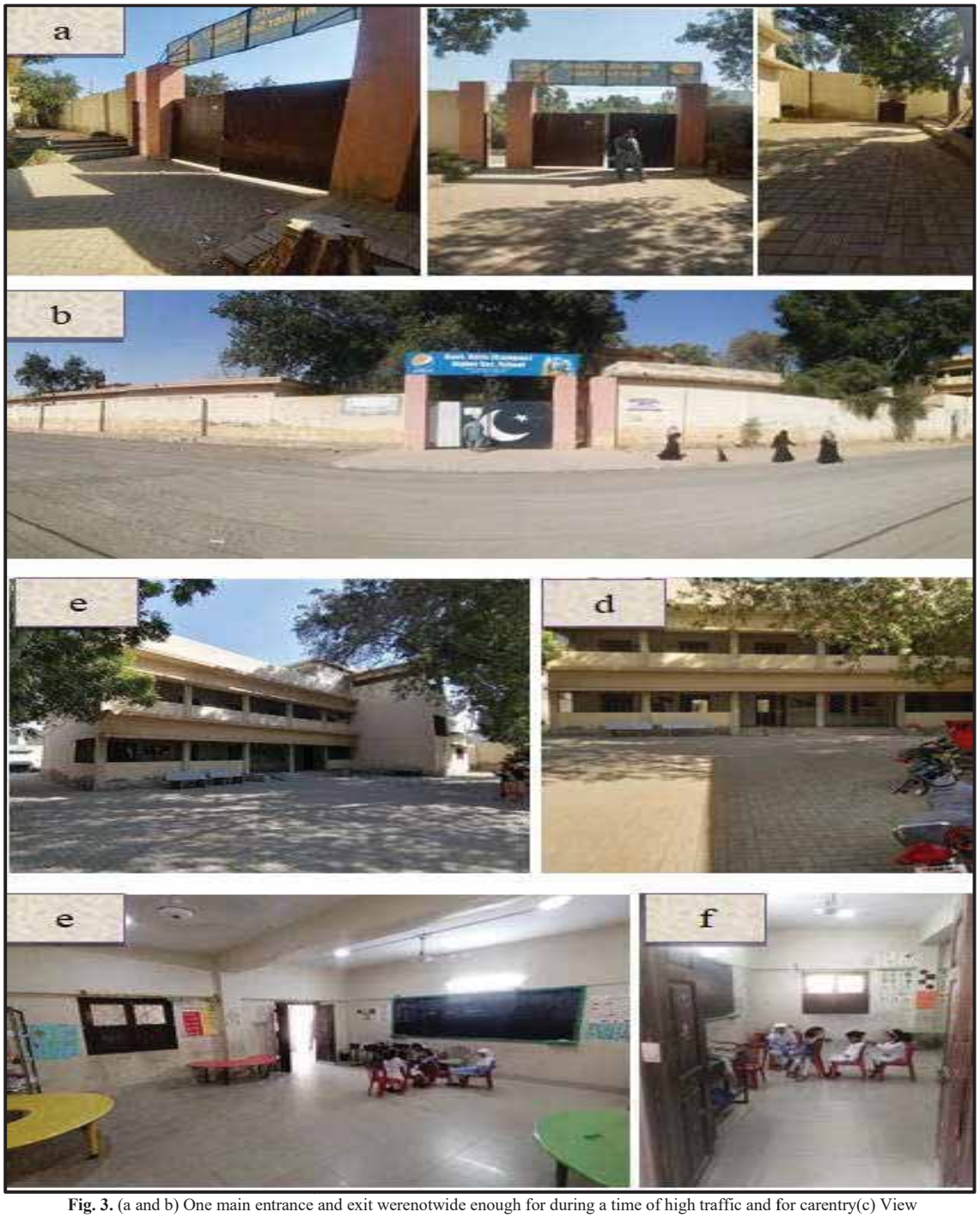


**Fig. 3.** (a and b) One main entrance and exit werenotwide enough for during a time of high traffic and for carentry(c) View shows that the school has only one entrance and exitfrom a built-uparea of the school (d) School's built-up part has a rampand stairs without railings (e and f). Only one door in the classroom

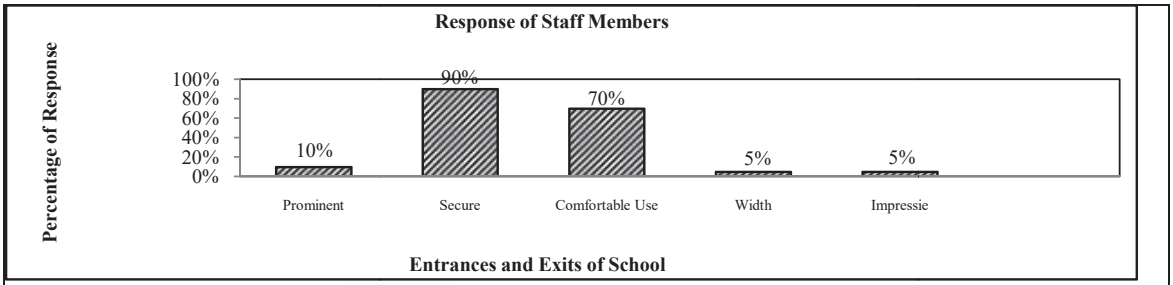


**Fig. 4.** Response of staff members about entrances and exits of the school

When asked about the school's entrances and exits, 10% of respondents stated that the entrances and exits were prominent, so they could not easily reach them; 5% said they were impressive; 5% said the main doors and exits of this school were wide enough for cars to enter, while 90% said the entrances and exits were secure, and 70% said they were comfortable to use, as shown in Figs. 3 and 4.

However, it was noted that the entrances and exits were not prominent, impressive, and sufficiently broad (at one of the main entrances and exits, even cars could not enter from there). At the same time, they felt secure and comfortable. It is significant since building wide entrances and exits were necessary because of the excessive user and vehicle mobility that prevented them from using the school's main entrance.

It is referenced by scholars [32] and [33] and is cited in part II: Literature Review of standards [28], [29], [30], and [31].

### *B. Corridors of school*


**Fig. 5.** (a) Wide corridors connecting various portions of aBuilding (b and c) Colourful soft boards in halls to create interest

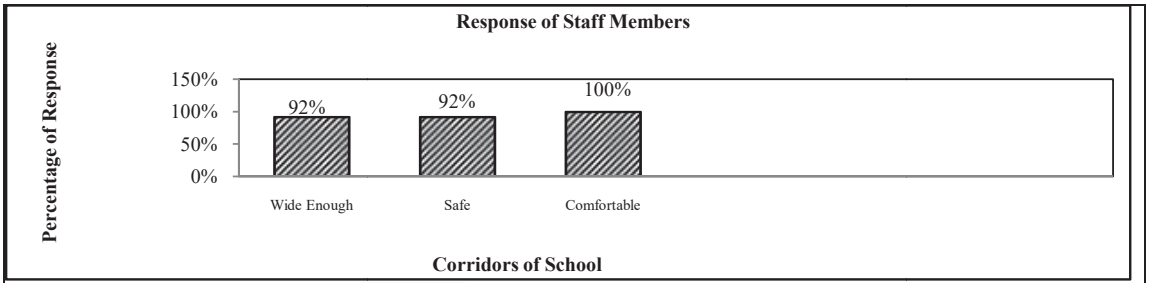


**Fig. 6.** Response of staff members about the corridors of the school

Of the defendants, 92% showed that the corridors were wide sufficient and could be used conveniently; 92% of defendants showed that the passages were safe to prevent accidents; and 100% of defendants showed that the use of the corridors was comfortable, as shown in Figs. 5 and 6.

Corridor columns were built into the walls. The corridors were wide enough for two wheelchairs to pass each other without feeling crowded, for other mobility aids, and for two-way traffic. They were also comfortable, secure, and safe. Corridors served as both the entrance to the classrooms and the perimeter of the classrooms.

In addition to being cited in part II: Literature Review, it is also mentioned in standards [28], [29], and [31] and is cited by academics [32] and [34] in addition to the visual analysis.

### *C. **Staircases of school***


**Fig. 7.** (a) Without a handrail staircase at school was not wide enough to accommodate two-way traffic

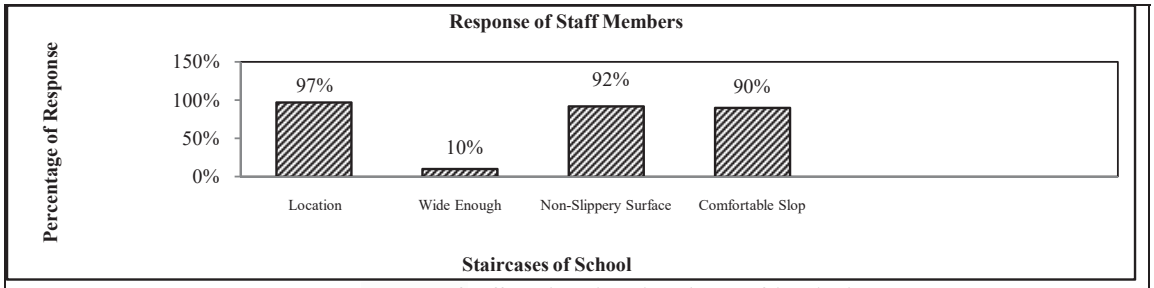


**Fig. 8.** Response of staff members about the staircases of the school

The above graphical representations in Figs. 7 and 8 show that 10% of respondents were happy with the width of the staircase. In comparison, 97% of respondents were pleased with the location of the stairs, 92% of respondents were happy with the non-slippery surface, and 90% were satisfied with the comfortable slope.

The staircase was found to be too narrow for researchers. The staircase's location was ideal, and it had a non-slip surface that made it easy to use. And enough room was provided to create a comfortable slope. It's crucial to remember that the staircase needs to be wide enough to support two-way traffic. In this school, a handrail on the stairs should be accessible and durable for handholds.

It is also mentioned in section II: Literature Review, as specified in standards [28], [30], and [31], and by scholars [35] and [36].

### *D. **Recommended facilities in this School***

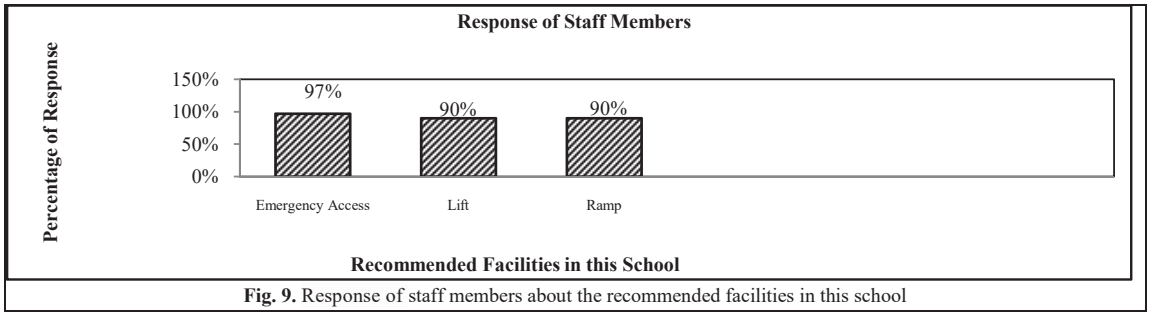


**Fig. 9.** Response of staff members about the recommended facilities in this school

The above Fig. 9 graphical **representation shows** that 97% of respondents suggested that there should be emergency access (from built-up areas of the school, from classrooms, and the upper floor in the form of a staircase and ramp), 90% of respondents suggested that there should be a lift in the school, and 90% of respondents suggested that there should be a ramp in this school.

It was noted that the school lacked emergency access during a fire or other disaster.It is referenced by scholars [36] and is cited in part II: Literature Review, which is listed in standards [28], [29], [30], and [31].

The ramp was also absent, which is the same situation. This school needs ramps for emergencies, wheelchairs for physically challenged users and the elderly, and strollers for young children. It is referenced by scholars [32, [35], and [37] and is cited in section II: Literature Review of standards [28, [30], and [31].

The term "lifts" refers to a few additional facilities do not present in the school. For people who are physically disabled, elderly, or pushing strollers, lifts should be offered at this school. It is referenced by scholars [37] and is cited in part II: Literature Review of standards [28], [30], and [31].

## V. CONCLUSION AND RECOMMENDATIONS

The research concludeswith various methods that suggest some critical topics about movement facilities that need to be discussed to increase user convenience. It was found that the sort of circulation that affected users' comfort in schools was primarily horizontal circulation.For user convenience, the **entrances and exits** were not wide enough in some places, like from classrooms and one main entry and exit of the school. Even cars could not enter from that main entrance. Entrances and exits in this school must be wide enough to allow users to enter and exit the school building quickly during high traffic (the opening and closing hours of the day) and for car entry. And should be wide enough for wheelchairs and baby strollers to be moved simultaneously from both sides of entrances and exits. One main entrance was not prominent and impressive. Entrances and exits were secure and comfortable. There were ramps in some places, but without handrails for physically challenged users or children's carts. But ramp access was not available from the upper floors.Also, the school had no emergency access (from built-up areas, classrooms, and the upper floor in the form of a staircase and ramp). Emergency access with signs should be present in this school. Emergency exits in the form of a staircase and ramp with handrails must be wide enough to allow the movement of users, especially those with wheelchairs and strollers, from both sides. A ramp consumes a lot of space to achieve a comfortable slope, but a ramp is a better alternative for an emergency exit. The location of the emergency exits should be well-designed to choose the safest path so that users can exit the premises quickly and safely by going straight into the ground and opening to the outside in the event of a fire or other emergency. Signs of an emergency exit and a plan for emergency exit routes should be placed for safety reasons. Emergency access should be free from barriers, equipped with fire-resisting materials, have a non-slip surface, and have emergency access doors that are easy to open.Likewise, the columns in thecorridors wererecessed into the walls.This school's corridors were wide enough for two wheelchairs to pass each other without feeling crowded, and additional mobility aids and two-way traffic. There were corridors all around the classrooms. They, therefore, also act as the doors to the classrooms. The corridors connecting different parts of a structure, typically short compared to their length, were comfortable, secure, and safe to prevent accidents. These corridors had colorful soft boards to add visual appeal. The school avoided modifications of level within a floor. In school, the floor surfaces were firm, leveled, and non-slippery.

Additionally, the school lacked another staircase for vertical circulation. In case of an emergency, this school should have additional staircases. The staircase was in the ideal location. The design of the stairs included enough room to produce a comfortable slope. The staircase was accessible to everyone, had a non-slip surface, was easy to use, and was easy to climb and descend. It also had enough lighting and ventilation. There shouldn't be more than 12 steps in a flight of stairs' total climb between floor landings. The staircase in the school building was made in that manner.The school's staircase was not wide enough. Its width was only 3 feet, 6 inches. It ought to have enough width to support two-way traffic. The staircase lacked a handrail. In this school, a railing on the stairs should be accessible and durable for handholds. In short, handrails help maintain stability by keeping people from falling or slipping, which would otherwise cause them to lose their balance.

The school did not have a ramp either. This school needs ramps for emergencies, wheelchairs for physically challenged users and the elderly, and strollers for young children. Ramps are also the best circulation features in the design and should be creatively incorporated into the school's functional space. Although a ramp takes up a lot of room to provide a comfortable slope, it is a preferable option for vertical circulation. Wheelchairs and strollers for young children should be able to go simultaneously in both directions on a ramp. The ramp needs a handrail for handholds. In short, handrails help maintain stability by keeping people from falling or slipping, which would otherwise cause them to lose their balance. In addition, the school lacked a lift. For people who are

physically disabled, elderly, or pushing strollers, lifts should be offered at this school. If stairs are nearby, the lifts should always be next to them to provide an alternative route. Lifts in a school building should be easily visible from the entrances. The lifts should have wide doors that can accept wheelchairs and be big enough and accessible to fit a small number of people. There should be a handrail in the lift that people may grab.

The school's designers should consider the recommended facilities for user comfort, as these facilities play a vital role in attracting people to this school.

## CONFLICTS

The authors certify that they do not have any conflicting interests to declare.

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