FIRE AUDIT REPORT

KIRORI MAL COLLEGE

DEPARTMENT OF GEOGRAPHY

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PAPER: - DIASTER MANAGEMENT FIELD BASED REPORT

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PREFACE

Fire safety is a paramount concern in any educational institution, and Kirori Mal College, University of Delhi, is no exception. As responsible citizens and students, we recognize the critical importance of ensuring a safe environment for learning and living within our college premises.

This project on fire auditing of Kirori Mal College stems from a collective desire to assess and improve the fire safety measures in place. With the guidance of our faculty and the support of college authorities, we embarked on this endeavour to comprehensively evaluate the existing fire safety protocols, identify potential areas for improvement, and propose actionable recommendations to enhance the overall fire safety preparedness of the college.

This project file serves as a documentation of our efforts, findings, and recommendations derived from thorough research, meticulous data collection, and detailed analysis. It encompasses the various aspects of fire safety auditing conducted within the college premises, including but not limited to fire detection systems, evacuation procedures, fire extinguishing equipment, training protocols, and compliance with regulatory standards.

Throughout the course of this project, we encountered challenges, gained insights, and collaborated with various stakeholders within the college community. We acknowledge the invaluable support and cooperation extended to us by the college administration, faculty members, staff, and students, without which this project would not have been possible.

We hope that this project file serves not only as a record of our endeavours but also as a catalyst for ongoing dialogue, action, and improvement in the realm of fire safety at Kirori Mal College. By raising awareness, fostering accountability, and advocating for proactive measures, we aim to contribute towards creating a safer and more secure environment for all members of the college community.

We express our sincere gratitude to everyone who contributed to the realization of this project and reaffirm our commitment to promoting fire safety awareness and preparedness within Kirori Mal College, University of Delhi.

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University of Delhi

ACKNOWLEDGEMENT

We extend our heartfelt gratitude to all those who contributed directly or indirectly to the successful completion of this project on fire auditing of Kirori Mal College, Delhi University.

Firstly, we would like to express our sincere thanks to Prof. Dinesh Khattar, Principal of Kirori Mal College, for granting us permission to conduct the fire audit and providing us with valuable insights into the college's fire safety measures.

We extend our appreciation to the faculty members and staff of Kirori Mal College who cooperated with us during data collection and provided us with the necessary information and access to facilities.

Special thanks are also due to the students of Kirori Mal College for their active involvement in fire safety drills, training sessions, and awareness campaigns. Their enthusiasm and participation have been crucial in fostering a culture of safety and preparedness within the college community.

Special thanks to our project supervisor [Name], whose invaluable guidance, support, and encouragement were instrumental in shaping this project. Their expertise and constructive feedback significantly enhanced the quality of our work.

Finally, we would like to express our gratitude to our friends and family for their unwavering support and understanding throughout this endeavour.

Thank you all for your contributions and support.

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Chapter 1

INTRODUCTION

Fire safety is a paramount concern in any educational institution, and Kirori Mal College, University of Delhi, stands as a beacon of academic excellence within the heart of the capital city. With a vibrant community of students, faculty, and staff, the college serves as a hub of learning and intellectual exchange. However, amidst the pursuit of knowledge and scholarly pursuits, it is essential to ensure the safety and well-being of all individuals within the college premises.

The aim of this project is to conduct a comprehensive fire audit of Kirori Mal College, evaluating its current fire safety measures, identifying potential gaps or areas for improvement, and proposing actionable recommendations to enhance the overall fire safety preparedness of the college.

The significance of fire safety in educational institutions cannot be overstated. Beyond compliance with regulatory requirements, effective fire safety measures contribute to creating a secure environment conducive to learning, working, and communal living. By proactively assessing and addressing fire safety concerns, colleges can mitigate risks, safeguard lives, and protect valuable assets.

It is our belief that this project will not only serve as a valuable resource for the college administration but also raise awareness and foster a culture of proactive fire safety awareness among all members of the college community. Together, let us work towards creating a safer and more resilient environment at Kirori Mal College, where the pursuit of knowledge can flourish unimpeded by the threat of fire hazards.

1.1 FIRE

Fire is the rapid oxidation of a material in the exothermic chemical process of combustion, releasing heat, light, and various reaction products.

“Fire is a very good servant, but, a very bad master. As long as fire is under our control, it serves a lot of useful purposes for us, but, once it goes out of our control, it can create a lot of destruction. However, despite the presence of fire safety measures, the occurrence of accidents is oftentimes inevitable.

It is this combination (of good servant and bad master), which is dangerous.

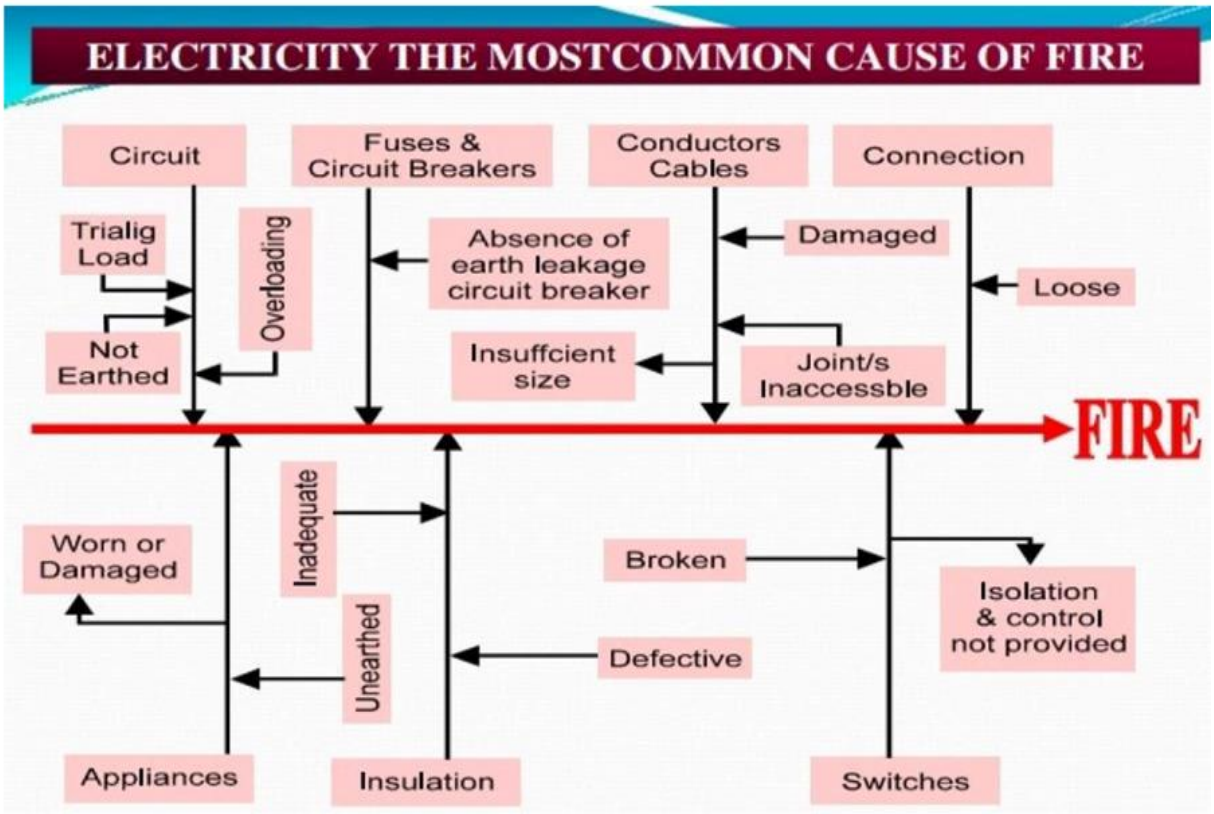
Because of the useful purposes that it serves, people keep sources of fire in/around their houses/workplace. And, these sources could sometimes result in "undesired" fire. Had fire been something, which serves no useful purpose – the number of incidents of fire would have been very less – as people won’t keep sources of fire around them.”[1]

Thus, the occurrence of fire-related accidents is oftentimes inevitable - in spite of all the safety precautions. For this reason, an insurance policy should always be taken.

[1] https://www.oxfordreference.com/display/10.1093/acref/9780199539536.001.0001/acref-9780199539536-e-789

1.1.1 THE MOST COMMON CAUSES OF FIRE: -

1. **Electrical malfunctions**: - Overloaded outlets, damaged cords, faulty wiring, or the use of incompatible appliances can spark electrical fires in dorm rooms or academic buildings.
2. **Smoking**: - Discarded cigarettes or improper use of smoking materials near flammable materials can ignite fires, particularly in outdoor areas or designated smoking zones.
3. **Heating appliances**: - Space heaters, radiators, or other heating devices can cause fires if placed too close to combustible materials or if malfunctioning.
4. **Candles**: - The use of candles in dorm rooms or common areas without proper supervision can result in fires if they are knocked over or left unattended.
5. **Faulty fire safety equipment**: - Malfunctioning smoke detectors, fire alarms, or sprinkler systems can fail to alert occupants or suppress fires effectively.
6. **Chemical hazards**: - Improper storage or handling of flammable substances, such as laboratory chemicals or cleaning agents, can lead to fires or explosions in science labs or maintenance areas.
7. **Combustible materials**: - cluttered storage areas containing paper, cardboard, textiles, or other flammable materials can fuel fires and hinder evacuation efforts.
8. **Cooking equipment**: - Unattended cooking, grease buildup, or improper use of cooking appliances like stoves, ovens, and microwaves can lead to fires in dormitories or shared kitchen areas.



[2]

Fig 1.1 Causes of Fire

[2] https://www.usfa.fema.gov/prevention/home-fires/at-risk-audiences/college-students/

1.1.2 FIRE HAZARD AND SAFETY

Fire hazards include all types of live flames, causes of sparks, hot objects, and chemicals that are potential for ignition, or that can aggravate a fire to become large and uncontrolled. Fire hazards also include all types of potential threats to fire prevention practices, firefighting, built-in fire safety systems and situations that restrict the escape of people from an affected building or area in the event of a fire. Fire hazards pose threats to life and property. It is, therefore, the prime object of safety systems to detect, remove or reduce the risk of fire threatened by those potential hazards.

The following fire hazards are common at home, in public places, transports and work places:

- Electric wires, higher loads, loose connections and old electrical equipment
- All cooking and heat generating appliances
- Smoking and personal lighters and matches
- Fireworks, pyro techniques, ammunitions and explosives
- Improper and unauthorized stowage of flammable and hazardous materials and Chemicals especially the flammable one.
- Insufficient capacity and numbers of emergency exits and stairs
- Insufficient numbers and types of fire extinguishers
- Absence of fire detection and alarm system
- Violation of building and fire codes

Fire safety is the set of practices intended to reduce the destruction caused by fire. Fire safety measures include those that are intended to prevent ignition of an uncontrolled fire, and those that are used to limit the development and effects of a fire after it starts.

Fire safety measures include those that are planned during the construction of a building or implemented in structures that are already standing, and those that are taught to occupants of the building. Threats to fire safety are commonly referred to as fire hazards.

1.2 OBJECTIVES: -

The objectives of the fire and safety audit are as follows:

a) Examine the existing fire and safety measures, procedures, system for controlling measures.

b) To Identify potential hazards which have caused or are likely to cause personal injury, property damage or loss of time.

c) Recommend on the basis of identified hazards, changes (if any) to improve upon the existing system and procedure of work.

1.3 LITERATURE REVIEW: -

S.NO	TITLE OF DOC/ARTICLE/PAPER	AUTHOR	YEAR OF PUBLICATION	SOURCE
1.	Building Safety and Human Behaviour in Fire.	M Kobes, I Helsoot	2010	Science Direct
2.	Review on Fire Safety Management and Application.	W.K. Chow	18 April 2001	Research Gate
3.	Travelling fires for Structural Design.	Jamie Stern	2012	Science Direct
4.	National Disaster Management Guidelines-School Safety Policy.	NDMA, Govt of India	September 2002	Government of India
5.	Fire & Safety Management.	M.V. Deshmukh	2012	Maharashtra Fire Service
6.	A Systemic Approach to Fire Safety Management.	J Santos Reyes	2001	Science Direct
7.	Hazard & Operability Analysis.	Jordi Dunjo	2010	Science Direct

How safe are Schools and Colleges in Delhi

Several renowned colleges and departments of the Delhi University are functioning without obtaining a Fire Safety Clearance (FSC) certificate or a No Objection Certificate (NOC) from the Delhi Fire Services (DFS), putting thousands of students' lives at risk in case of a disaster.

Delhi University colleges like LSR (Lady Shri Ram College for Women), Jesus and MaryCollege, Shaheed Sukhdev College of Business Studies, Miranda House and College ofVocational Studies have been functioning without obtaining an NOC or Fire Clearance Certificate from the Delhi Fire Services, according to an RTI reply received by Mohit Gupta, a Delhi-based advocate. *The Sunday Guardian* tried to speak to the principal of these colleges, but most of them were not aware that they required any such certificates

from the Fire Department. 'DU colleges compromise with fire safety, play with students' lives.

by Dibyendu Mondal, The Sunday Guardian, 19th Nov. 2017

According to the Mumbai Fire Brigade, less than 1% of the nearly three lakh buildings in thecity are fire compliant. This includes not just restaurants and shopping malls, but also educational institutions, housing societies, and commercial complexes. After the recent Kamala Mills fire, the issue of fire safety in buildings must be treated with urgency, and not just in Mumbai. The situation is no different in Delhi. The recent sealing drives in markets that have flouted building norms and regulations are a case in point. Many shops and restaurants have been found to have changed sanctioned layout plans and increased their Floor Area Ratios. Some have narrow staircases and no proper fire exits, which together could cause a minor accident to become a major disaster.

Ensuring that buildings such as educational institutions, commercial complexes, and even housing societies are compliant with fire safety norms is one of the fundamental jobs of an administration. The lackadaisical attitude of the administration is revealed bya Comptroller and Auditor General of India report that found that 78% of the budget allocated to buy fire safety equipment and rescue vehicles was unused in Maharashtra

between 2010 and 2015.[2] '*Delhi and Mumbai are tinderbox cities. They must strengthenfire and safety regulations.*

Hindustan Times 21st January 2018

Recent Cases of Fire in Institution: -

A fire broke out at a room in the girl's hostel at the School of Planning and Architecture'sITO campus early Thursday after an alleged short circuit, drawing criticism from the students over 'poor facilities. The residents of the room said the fire damaged a lot of their important possessions, including clothes, study material and documents such as passports and certificates. Students of the institute blamed the authorities for negligence and lack of proper infrastructure that led to Thursday's fire. Eyewitnesses said the fire was first noticed in the room around 5:30am and the fire brigade immediately informed.3'Fire at School of Planning and Architecture's ITO hostel raises safety concerns.' By A Mariyam Alavi.

Hindustan Times, 27th October 2017

Fire auditing in India has garnered significant attention in recent years due to the increasing number of fire accidents and the need for robust fire safety measures. Several studies have explored various aspects of fire auditing, including its effectiveness, challenges, and best practices.

1. "Assessment of Fire Safety in High Rise Buildings Using Fire Risk Index." Journal of Advanced Research in Dynamical and Control Systems, 11(3), 279-286.

This study evaluates the effectiveness of fire auditing in high-rise buildings in India by developing a fire risk index. It assesses different parameters contributing to fire risk and suggests improvements in fire safety measures based on the audit findings. **Singh, A., & Verma, H. K. (2019).**

2. "Fire Safety Management in Indian Industries: A Review." International Journal of Disaster Risk Reduction, 31, 1283-1295.

This review paper discusses the challenges faced in implementing fire safety measures and conducting fire audits in Indian industries. It highlights regulatory gaps, lack of trained personnel, and inadequate infrastructure as major hurdles in effective fire auditing**. Gupta, R., & Datta, D. (2018).**

3. "A Review on Fire Safety Management Practices in Indian Hospitals." International Journal of Safety and Security Engineering, 10(1), 21-30.

This review examines the fire safety management practices in Indian hospitals and identifies best practices in fire auditing. It emphasizes the importance of regular audits, staff training, and adoption of advanced fire detection and suppression systems. **Sharma, A., & Joshi, S. (2020).**

1.4 STUDY AREA: -

Kirori Mal College is one of the constituent colleges of the University of Delhi, located in the North Campus of DU, in New Delhi, India. Established in 1954. It offers undergraduate and graduate courses in science, arts, and commerce. It offers extracurricular activities and is known for theatre, music and art. Students and alumni ofthis college are often called Kirorians. One of the most prestigious colleges of Universityof Delhi, it admits students with high academic cut-offs. National Assessment and Accreditation Council accredited it with a CGPA of 3.54(A+) in 2016, which is third highest among all Delhi University colleges.

Kirori Mal College, nestled in the heart of Delhi, India, boasts a prime location (28 40’58.79” N- 77 12 27.99” E & Elevation- 237m) that pulsates with the vibrant energy of the city. Situated in the bustling North Campus of the University of Delhi, it enjoys a central position amidst a plethora of educational institutions, cultural hubs, and historical landmarks. The college's physical setting is characterized by its sprawling campus, adorned with lush greenery and shaded pathways, providing a serene oasis amid the urban chaos

Kirori Mal College is a co-educational constituent and a part of north campus, Universityof Delhi. It has successfully maintained its place as one of the finest within the University of Delhi. The College maintains its own tradition of celebrating Founders’Day, Annual Day & Graduate Farewell Dinner. The College has been honoring the staffmembers who have rendered 25 years of their services in the college. Various events are organized in the college annually by Avenues, The Commerce Society, Enactus, Debsoc, Musoc, fostas, Sensation, film society, NSS, NCC and the round table etc. College provides financial assistance to its deserving students. The College has about 5200 students on its roll out of which 170 live in the Hostel. Kirori Mal College also Shined in NASA while participating in NASA Lunabotics Competition 2013 in Kennedy Space Centre, Florida and won two prizes. In 2014, the team has undertaken two projects and the team has been invited for the University Rover Challenge (URC), world’s premier robotics event for college students.

KIRORI MAL COLLEGE FIRE MANAGEMENT

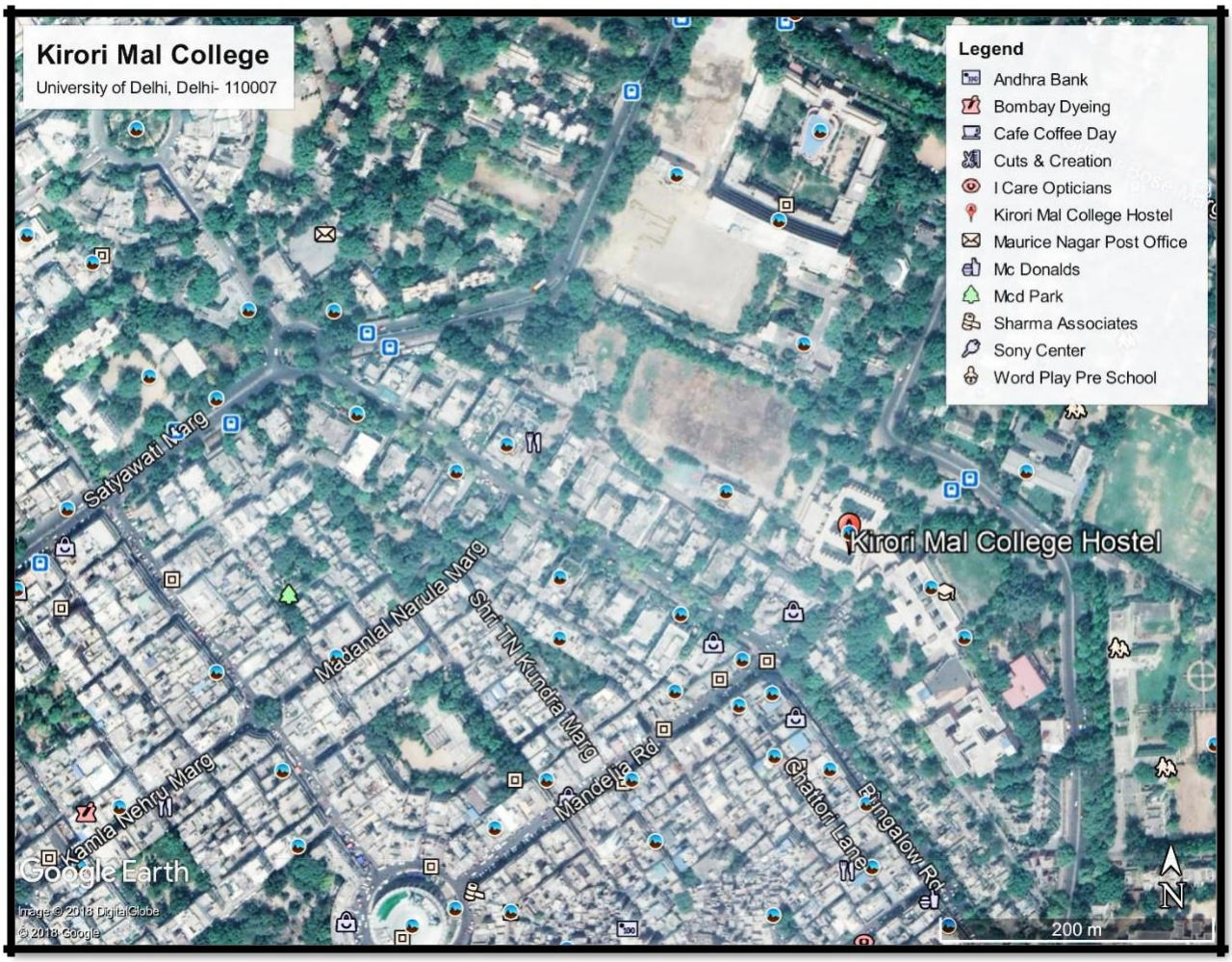


Fig 1.2 Satellite Imagery of Kirori mal college

GEOGRAPHICAL LOCATION:

LATITUDE: 28° 40' 60" N

LONGITUDE: 77° 12' 26" E

STUDY AREA: 2ND FLOOR OF ARTS BLOCK, KIRORI MAL COLLEGE

LOCATION: NORTH CAMPUS, UNIVERSITY OF DELHI

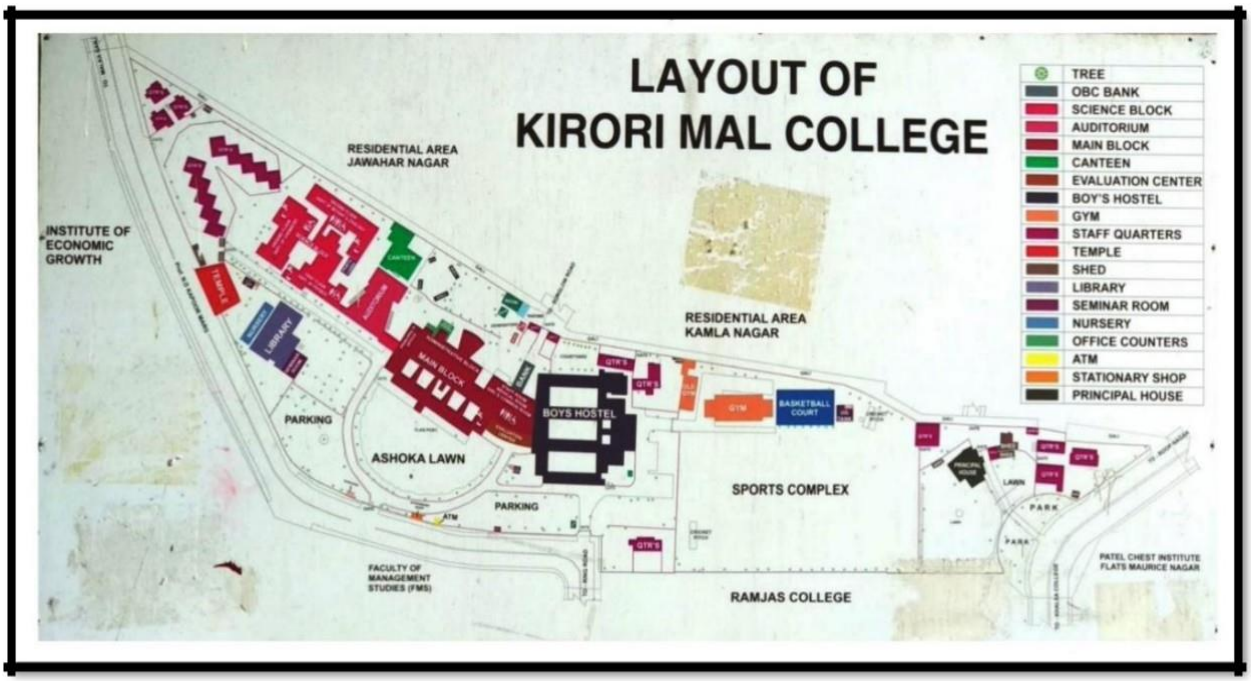


Figure 1.3 Layout of Kirori Mal College

Fig 1.4 While Surveying

Figure 1.5 While Surveying

1.5 RESEARCH METHODOLOGY: -

This section outlines the approach and techniques used to collect, analyse, and interpret landslide data in Chamoli District. In landslide studies, a combination of analytical, descriptive, and statistical techniques is often employed to characterize landslide hazards, assess vulnerability, and develop mitigation strategies: -

Questionnaires: - Questionnaires consist of a set of structured questions administered to respondents either in person, via mail, email, or online. They can be used for both quantitative and qualitative data collection**.**

Interviews: - Interviews involve direct interaction between the researcher and the respondent. They can be structured, semi-structured, or unstructured, depending on the level of flexibility needed to explore responses in-depth.

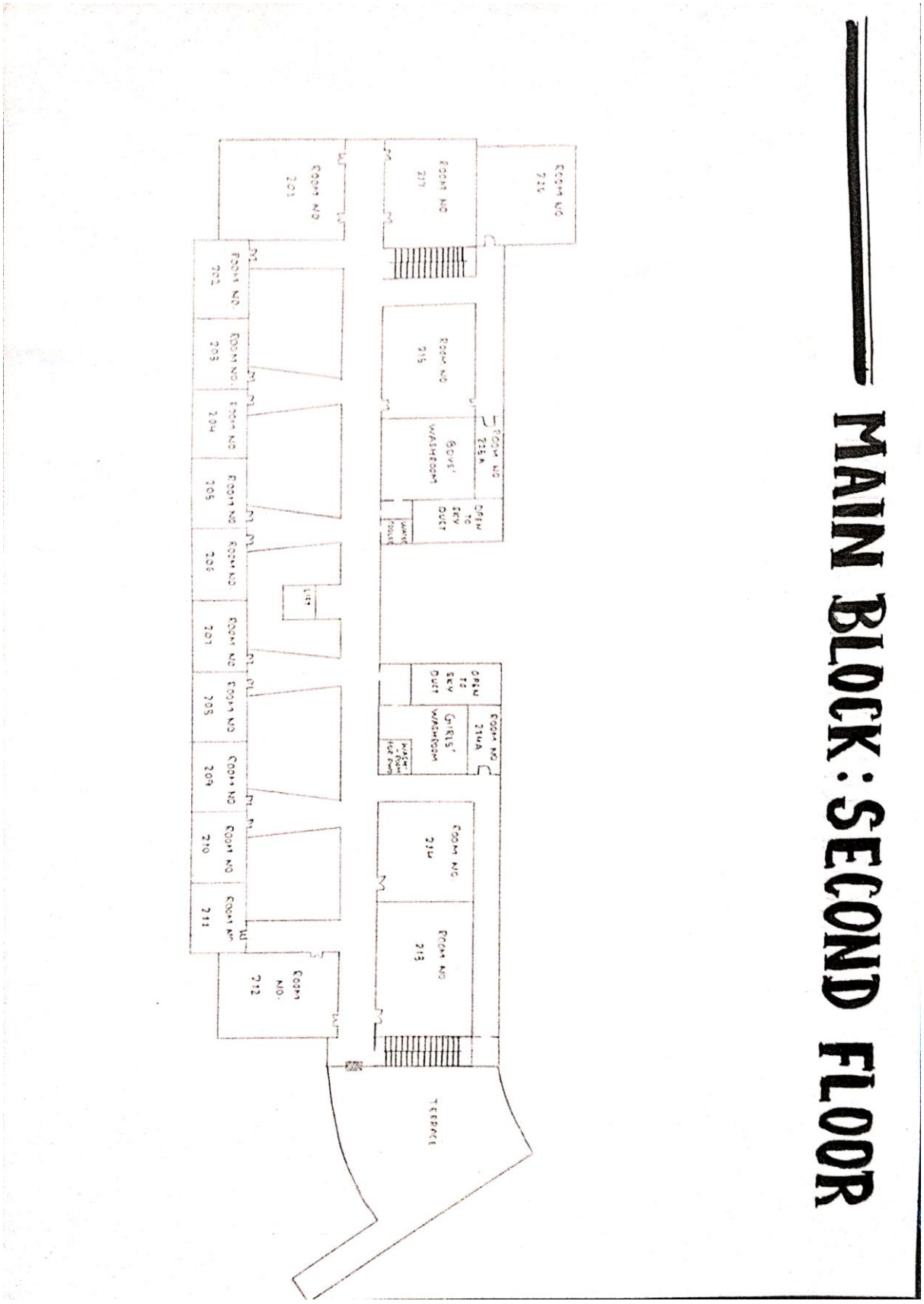
Observation: - Observation involves systematically watching and recording behaviours, events, or interactions in the field. It can be participant observation, where the researcher is actively involved in the setting, or non-participant observation, where the researcher remains an observer**.**

Surveys: - Surveys involve collecting data from a sample of individuals within a population using standardized questionnaires. Surveys can be conducted face-to-face, over the phone, via mail, or online**.**

Focus Groups: - Focus groups involve bringing together a small group of participants to discuss specific topics in depth. A moderator guides the discussion to elicit opinions, attitudes, and perceptions from participants.

Case Studies: - Case studies involve an in-depth examination of a single individual, group, organization, or event. Researchers collect data through various methods such as interviews, observation, and document analysis.

Fig 1.6 Mental sketch of Main Block: Second floor.



Chapter 2

Fire Preparedness status in Kirori Mal College

Fire hazards include all types of live flames, causes of sparks, hot objects, and chemicals that are potential for ignition, or that can aggravate a fire to become large and uncontrolled. Fire hazards also include all types of potential threats tofire prevention practices, firefighting, built-in fire safety systems and situationsthat restrict the escape of people from an affected building or area in the event of a fire. Fire hazards pose threats to life and property. It is, therefore, the prime object of safety systems to detect, remove or reduce the risk of fire threatened by those potential hazards.

Incidents of fires are usually not evenly distributed. There are higher number of fires during:

Summer season: Due to higher ambient temperature; as well as leaves etc. being dry –catch fire easily. This is the time, when many forest-fires start.

Some specific festive events – due to use/availability of fire-crackers, and/or lights etc. Fire based lights could pose a direct fire-risk, while, electricity-based lighting could cause the risk due to overloading.

Hence, it's more important to be especially careful during these periods. Not only are the chances of incidents higher, but, the chances of your local fire department being overloaded also, very high. This might have an impact on their ability to respond swiftly to your call –in case there is a need – as they could be busy fighting fire elsewhere.

The following fire hazards are common at home, in public places, transports and work places:

Electric wires, higher loads, loose connections and old electrical equipment
All cooking and heat generating appliancesSmoking and personal lighters and matches

Fireworks, pyro techniques, ammunitions and explosives
Improper and unauthorized stowage of flammable and hazardous materialsand chemicals especially the flammable ones
Insufficient capacity and numbers of emergency exits and stairsInsufficient numbers and types of fire extinguishers Absence of fire detection and alarm system

Violation of building and fire codes

Fire safety is the set of practices intended to reduce the destruction caused by fire. Fire safety measures include those that are intended to prevent ignition of an uncontrolled fire,and those that are used to limit the development and effects of a fire after it starts.

Fire safety measures include those that are planned during the construction of a building or implemented in structures that are already standing, and those that are taught to occupants of the building. Threats to fire safety are commonly referred to as *fire hazards*.

"Smoke and Fire are the greatest dangers we face in College Buildings**.** Smoke is thegreatest danger to life and Fire the greatest danger to property."

Fires are started either because people are careless with fire hazards or because they are not alert to fire hazards. This plan deals with what happens to people if a fire is started. This plan has three objectives:

1. To ensure that the people know what to do if there is a fire;
2. To ensure that the College can be safely evacuated; and
3. To alert people of some of the fire hazards the College is providingcontingency measures against.

Protocol to be followed during emergency:

Determine the scope and impact of theincident Prioritize emergency actions

Deploy and coordinate resources and equipment

Communicate information and instructions through the appropriate chain ofcommand.

Monitor and re-evaluate conditions.

Supply on a routine basis updated information to the Incident Commander.Coordinate with government agencies.

Means of Egress

All residential buildings have at least one means of egress (way of exiting the building),and most have at least two. There are several different types of egress:

Interior Stairs

All buildings have stairs leading to the street level. These stairs may be enclosed or unenclosed. Unenclosed stairwells (stairs that are not separated from the hallways by walls and doors) do not prevent the spread of flame, heat, and smoke. Since flame, heat, and smoke generally rise, unenclosed stairwells may not ensure safe egress in the event of a fire on a lower floor. Enclosed stairs are more likely to permit safe egress from the building if thedoors are kept closed. It is important to get familiar with the means of egress available in your building.

Exterior Stairs

Some buildings provide access to the apartments by means of stairs and corridors that are outdoors. The fact that they are outdoors and do not trap heat and smoke enhances their safety in the event of a fire, provided that they are not obstructed.

Fire Tower Stairs

These are generally enclosed stairwells in a “tower” separated from the building by air shaftsopen to the outside. The open-air shafts allow heat and smoke to escape from the building.

Fire Escapes

Many older buildings are equipped with a fire escape on the outside of the building, whichis accessed through a window or balcony. Fire escapes are considered a “secondary” or alternative means of egress and are to be used if the primary means of egress (stairwells) cannot be safely used to exit the building because they are obstructed by flame, heat, or smoke.

Exits

Most buildings have more than one exit. In addition to the main entrance to the building, there may be separate side exits, rear exits, basement exits, roof exits, and exits to the streetfrom

stairwells. Some of these exits may have alarms. Not all of these exits may lead to thestreet. Roof exits may or may not allow access to adjoining buildings.

2.1 Infrastructure of the building

If we observe the Arts block of KMC then we see the building are old and there are many cracks and damage inside the classrooms, anytime there could be a collapse of roof or can cause a threat to the students as well as teachers in case of any fire hazard.

The old structure has a high risk of fire, which could endanger the students. The walls have several fissures, which might allow fire to spread rapidly. The electrical sockets are old and may not function properly, resulting in sparks and a fire. The old fans are also in poor condition and may overheat, worsening the situation if a fire breaks out.

What's concerning is that the structure lacks contemporary firefighting systems, such as sprinklers and smoke detectors. So, if a fire started, there would be no way to quickly extinguish it or warn people.

For the students, being in this old building means they're always at risk of a fire, even though they have to be there for classes. It's a scary thought, but they still have to go about their day, hoping nothing bad happens.

Also, there is a lack of basic infrastructure like fire extinguisher on every floor of the Arts block of Kirori mal college. The ratio of number of fire extinguisher to the number of students on each floor is far less also some of the fire extinguishers are outdated.

The condition of the electronic sockets, appliances like (bulb, fans, and damaged wirings) are very poor and hence poses a threat for the students and teachers using these appliances or these appliances can cause a huge damage in case of any fire outbreak.

The strength and rigidity of structural materials (concrete, steel, wood, etc.) may be significantly reduced when fire temperatures rise above 1,000°C during the fully developed stage. This material deterioration can make structural elements unable to support intended structural loads, which can result in the structure collapsing entirely or partially during or after a fire. Furthermore, material deterioration poses a serious risk to structural safety by having the ability to permanently destroy structures and prematurely fail buildings intended to withstand other natural disasters.

Even if the Arts Block building survives a fire without losing any lives, the aftermath of nearly all fires results in financial losses, the size of which varies depending on the intensity of the fire. Property loss from burning, sprinkler operation, firefighting operations (damage to property from fire brigade water, breaking of doors and windows, etc.), falling debris from partial or complete collapse of structure, structural damage, and repair costs are examples of direct losses from fire hazards. Conversely, indirect losses consist of things like being unable to utilize a property while repairs are being made, losing it due to a temporary or permanent move, losing it due to a structure being demolished, paying more for insurance, contaminating the environment, etc.

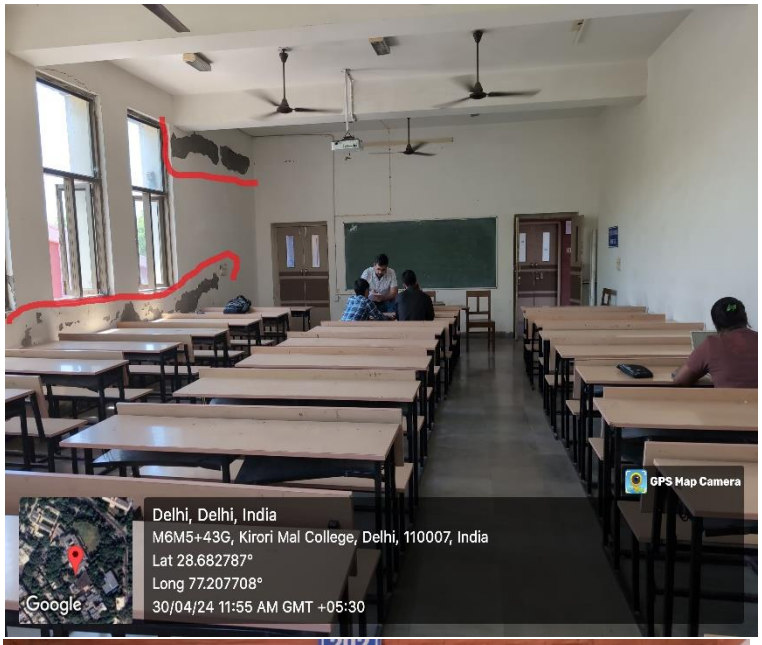


Fig 2.1 Damaged Infrastructure

2.2 Problems related to fire preparedness

There are many problems related to fire preparedness in any institution which causes threat to students and teachers in that institution in case of any fire outbreak, these problems are as follows: -

1. **Outdated Fire safety equipment**: - There are many fires safety equipment's which are outdated such as fire alarms, extinguishers, and sprinkler systems. These may not function properly in case of a fire, putting students and staff at risk.

2. **Lack of fire mock drills and training: -** There are not regular mock drills and training for fire hazard because of which the students may panic or be unsure what to do or how to respond to a fire emergency.

3. **Blocked Exits and Escape Routes**: Overcrowded classrooms or classrooms with only one escape route can obstruct the students in case of fire incident, making it difficult for students and teachers to evacuate quickly and safely during a fire. Also, narrow hallways pose a threat for the overcrowded students in case of safely evacuation in case of fire emergency.

4. **Poorly Maintained Infrastructure**: Buildings having poor infrastructure that are not properly maintained like damaged wires, bulbs, fans, electronic sockets and blocked ventilation systems can increase the risk of fire hazards.

5. **Ignorance of Fire Safety Procedures**: Some students and staff may not be aware of basic fire safety procedures, such as how to use a fire extinguisher or when to evacuate a building. This lack of awareness can hinder effective response to a fire emergency.

6. **Lack of Fire Preparedness in Vulnerable areas**: Some of the areas in the college campus are vulnerable which requires continuous monitoring like campus cafeteria, labs in science block and main panel room which are very vulnerable and can cause huge damage in case of fire outbreak.

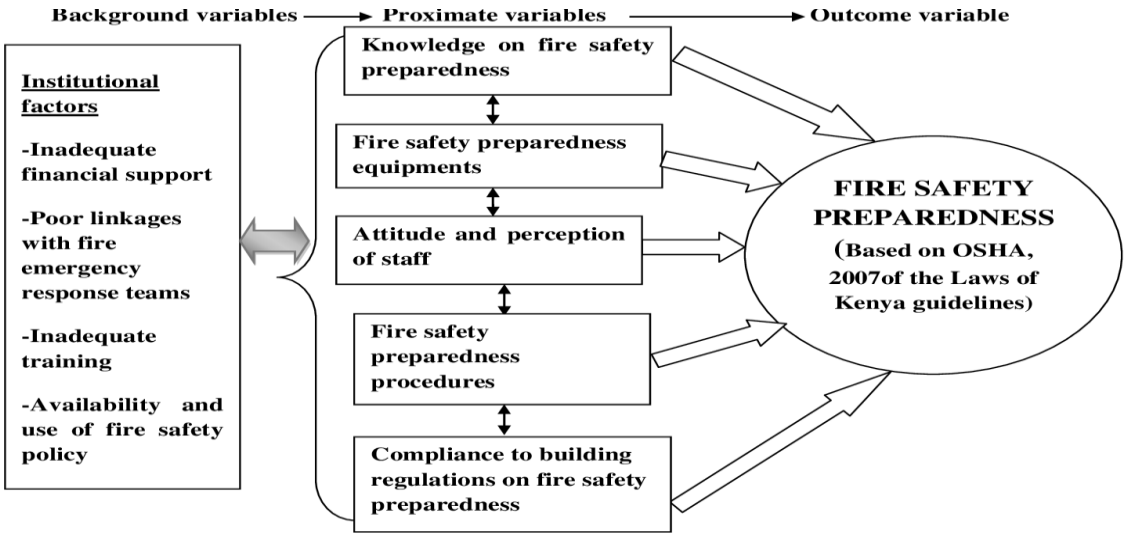


Fig 2.2 Fire Safety Preparedness Guidelines

Chapter 3

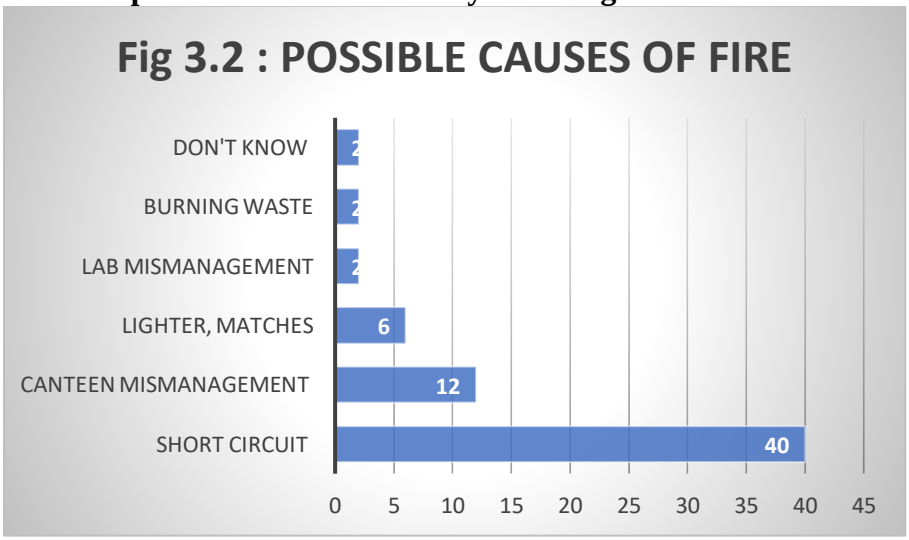
AWARENESS REGARDING FIRE PREPAREDNESS IN KIRORI MAL COLLEGE

3.1 Findings: -

1. **Students who have experienced any fire incident in the college for past 3 years**?

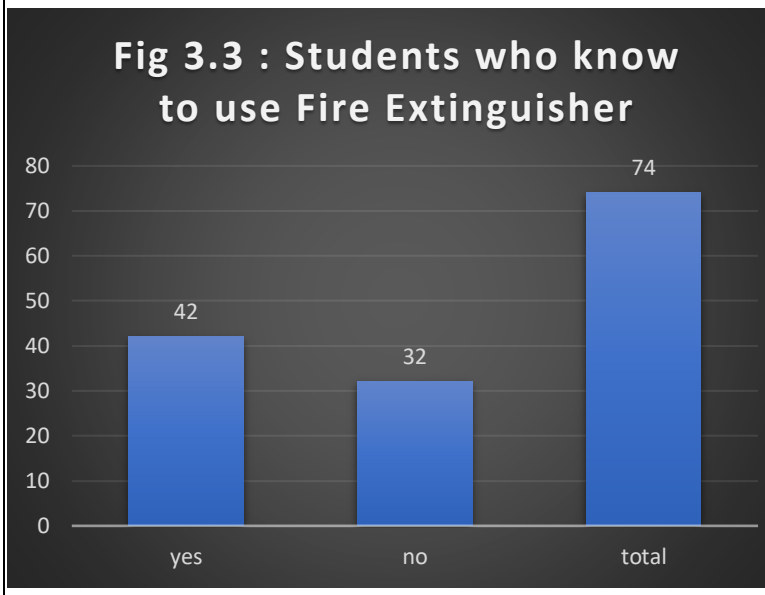
As many of the respondents have not witnessed or experienced any fire incident in the college for past 3 years, few of them have observed mostly happened by short circuits or due to mismanagement with the equipment's in the chemistry labs.

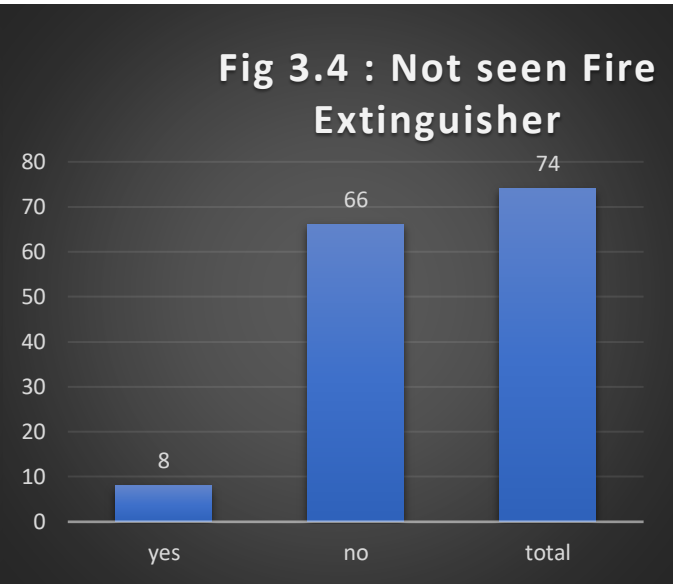
2. **What can be the possible causes of fire in your college**?



As per the findings most of the respondents have responded that the possible causes of fire outbreak in college could be because of short circuit through damaged wires and defective electronic sockets and appliances. Also, other respondents have responded about the canteen mismanagement due to presence of cooking gas can be a possible cause for fire outbreak.

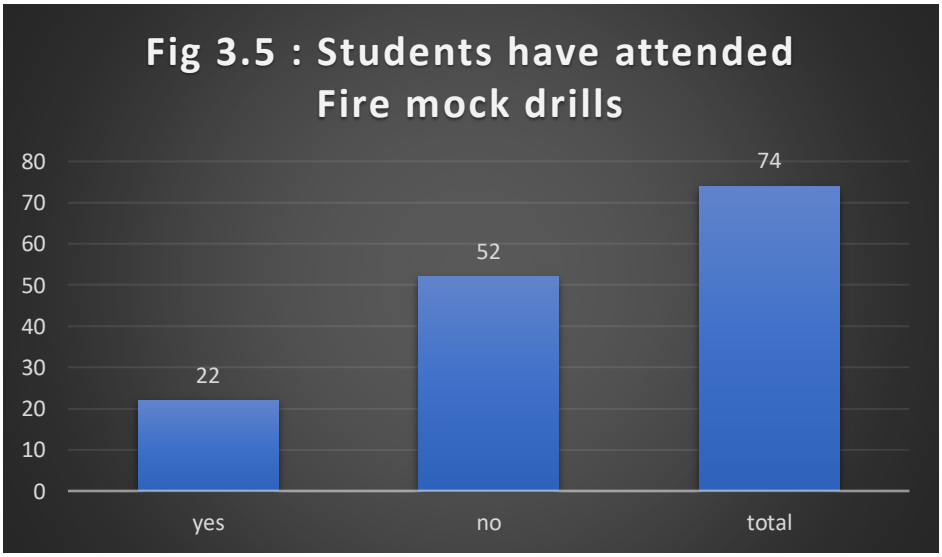
3. **Have you seen any fire extinguisher in college. If yes, do you know how to use it**?





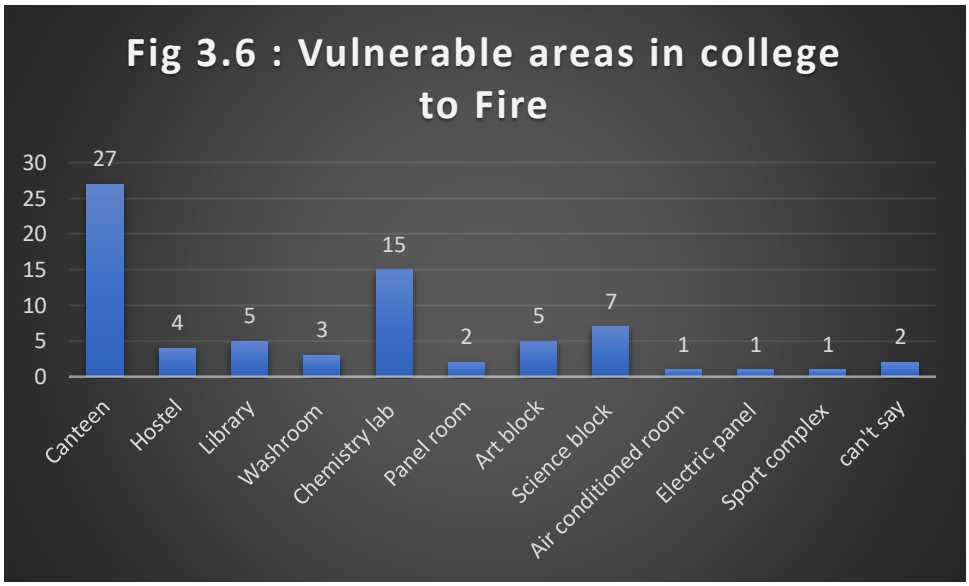
As per the finding most of the respondents have seen a fire extinguisher but 8 respondents have not seen which is serious situation, and most of the respondents know how to use a fire extinguisher and serious concern is that out of 74 respondents 32 don't know how to use one so, college should initiate fire mock drills on monthly basis otherwise in case of a fire incident there could be many casualties.

4. **Have you attended any fire drills in college**?



As per the findings most of the respondents have been a part of fire mock drills and training programmes organized by the college like NIDM, which has benefitted the students and other respondents have not attended or been a part of any mock drill which can be a concern in case of any fire emergency.

5. **Which of the following area in your college is more vulnerable to fire**?



As per the finding most of the respondents have responded that the highly vulnerable areas for a fire outbreak are cafeteria (because of presence of cooking gas or any leakage in gas pipelines can cause a fire outbreak), chemistry lab (because of presence of hazardous chemicals, candles etc. can cause a huge damage and can trigger fire). These areas are vulnerable and also evacuation from these places is difficult hence these areas need to be continually monitored and maintained in order to prevent any fire outbreak incident.

Analysis of Data: -

As per the findings we can see that there is a possibility that fire incident can takes place in college due to poor infrastructure and will pose a threat for the students and teachers in the college hence continuous monitoring and repairment of the defective and damaged infrastructure should be done by the administration of the college. The outdated and old rusted fire safety equipment's like fire extinguishers should be changed and increase the number of fire extinguishers at least 7 on each floor of the Arts block of Kirori mal college. Most of the students are aware of the fire safety equipment's but many of them don't know how to use it which can be a major concern in case of any fire outbreak incident hence college should organize more frequently fire mock drills and should ensure maximum participation of the students.

In many rooms of the second floor of Arts block there is only one exit hence those rooms should have easy access to fire safety equipment's and spread awareness among students of what to do in case of any fire incident and how to evacuate safely. The stairs should be made broader as there is a narrow staircase which can cause a trouble because of overcrowding of students in case of any fire incident. There are many vulnerable areas in the college where the Fire incident can happen and safely evacuation from those areas is somehow difficult like the cafeteria, Labs in Science block and Main Panel rooms and areas having damaged wiring. These areas need to be frequently monitored and maintained by the administration because these areas are situated in the interior where fire brigade can't go, hence these areas should have the greatest number of fire safety equipment's and the training of how to use it.

RECOMMENDATIONS

A high standard of housekeeping and building maintenance is probably the most important single factor in the prevention of fire. Listed below are some specific directions to avoid fire hazards: -

- Keep a check: Keep checking the LPG cylinder in the cafeteria whether it is leaking or not. Also frequently monitored the LPG pipelines and damaged wires for short circuit.
- Fire extinguisher: Install fire extinguishers near the fire vulnerable areas like cafeteria, Labs in science block, at every floor of the Arts and Science block of college. A regular maintenance of fire extinguishers should be ensured.
- Fire alarm: Install fire alarm at each and every floor of the Arts and Science block of the college so that in case of a fire, everyone gets aware of it and acts accordingly on time.
- Evacuation drill: Organize timely evacuation drills so that students and teachers present in the college are aware of how to evacuate themselves if fire occurs and also know how to use which fire extinguisher and when.
- Carefully mark all the fire vulnerable areas and keep all the inflammable things away of the vulnerable areas.
- Keep all kind of inflammable fuels and other things in a tight container and in a separate place.
- Install sandbags outside each room in the Arts Block especially those having only one exit point.
- First aid box: all the floors of the Arts and Science block should have the first aid kit for first hand.
- Do not use the stairwells for storage or accumulating of garbage. Assure proper management of garbage and refuse including packaging and storage materials.
- Keep any stairwell, smoke and fire doors closed at all times and maintained in proper working order.
- Store and use flammable and combustible liquids and gases in approved quantities and only in approved containers and locations. (Combustible materials shall not be used to absorb flammable or combustible liquid spills within buildings.)
- Do not permit combustible waste materials to accumulate in quantities or locations, which will constitute a fire hazard.
- If 'No Smoking' policy is established, avoid careless smoking, use large deep ash trays, do not put burning materials such as cigarettes and ashes into garbage cans and ensure full extinguishment of smoking materials.

CONCLUSION

The study examined the fire emergency safety preparation at Kirori Mal College, University of Delhi, to determine how prepared the College and the students there are to combat a fire outbreak, with the goal of identifying areas for further improvement. According to the survey, colleges and their users are not adequately prepared to combat a fire outbreak. Several mandatory active and passive fire emergency safety measures were not included in the structure. Key active measures that are not included include automatic fire detection devices, fire alarm systems, fire blankets, and full-scale firefighting equipment such as hose reels, wet or dry risers, drenchers, and sprinklers.

Dampers, fire doors, fire advertising, and gathering points are significant examples of passive measures absent from the building, as is the availability of fire extinguishers. The study found that, while the majority of respondents were aware of the location of the few emergency firefighting hand appliances provided in the building, most students were unaware of how to operate the majority of the common fire emergency safety provisions. The majority of respondents also lacked understanding of several basic fire safety emergency processes, indicating that overall fire emergency readiness in the college structure is poor. Based on the building's existing lack of suitable fire emergency safety measures and its use by residents who are primarily unfamiliar with fundamental fire emergency safety protocols, timely and effective response to fire occurrences in such a facility cannot be assured. In summary, the study emphasized the requirements for public buildings, including academic institutions, to be appropriately equipped to resist fire outbreaks.

Regarding the Kirori Mal College's fire emergency safety preparedness, the study has made specific contributions to knowledge by establishing empirical evidence on the following topics: the degree to which building users can operate basic fire emergency safety devices; the level of users' awareness of common fire emergency safety protocols; the active and passive measures provided; and the adequacy of said measures.

Based on the outcome of the study, the following recommendations are made in order to enhance the fire safety level in the college building: the building should be retrofitted with active and passive firefighting and protection measures found to be missing; all active firefighting devices should be checked regularly to ensure they are in good working order at all times; regular fire safety workshops and seminars should be carried out in the institution for the benefit of the university community; and regular fire drills should also be conducted in the building from time to time to help improve users awareness level on basic fire emergency safety protocols.

Fig 3.7: Fire Preparedness Plan

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APPENDIX

QUESTIONNAIRE: -

A. **RESPONDENT BACKGROUND**: -

1. Name –

2. Age –

3. Gender - M / F

4. Educational qualification –

B. **FIRE RISK ASSESSMENT**: -

1. Have you experienced any fire incident in your college in past 3 years? Yes / No. If yes, then specify.

2. What do you think what can be the possible cause of fire in this college?

3. Have you seen any fire extinguisher in college. If yes, do you know how to use it?

4. What do you think is the fastest way to evacuate students and staffs in time of fire?

5. Is your department ready to tackle fire hazard?

6. Have you attended any fire drills in college?

7. What do you think is the most common cause of fire outbreak?

8. What is the structural mismanagement that can cause fire and ways to correct it?

9. Which of the following area in your college is more vulnerable to fire?

10. Any suggestion or change you want to make in the existing disaster preparedness plan of college or any improvement that you want to suggest?