Evaluating Crime Prevention Through Environmental Design (CPTED) Principles in Educational Institutions: Occupant Insights

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Abstract

This research study explores the application of Crime Prevention through Environmental Design (CPTED) principles within educational institutions in the built environment. CPTED aims to create safe and secure environments by strategically designing physical spaces to deter criminal activities. The study assesses how occupants, including students, faculty, and staff, perceive and interact with the implementation of CPTED measures in educational settings, taking into account the insights provided by prominent researchers in the field.

Randy Atlas is a prominent researcher in the field of Crime Prevention Through Environmental Design. His work focuses on implementing CPTED strategies in various settings, including educational institutions. His findings have contributed to understanding how effective design can reduce crime and enhance safety within schools and campuses. Ray Jeffery is another well-known researcher who has extensively studied CPTED principles and their application in educational settings. His research has provided insights into the role of the physical environment in influencing human behavior, crime prevention, and creating safer educational institutions. Incorporating the knowledge and expertise of these researchers, this study aims to shed light on the effectiveness of CPTED strategies in promoting safety, enhancing the learning environment, and fostering a sense of security among the occupants.

To achieve these objectives, both qualitative and quantitative analysis will be conducted in this research. Online survey tools will be utilized to gather data from the occupants, allowing for a comprehensive examination of their perspectives on CPTED measures in educational institutions. The combination of qualitative insights and quantitative data will provide a robust understanding of the impact of CPTED strategies on safety and security within the built environment of educational facilities. The findings of this investigation could provide valuable insights for policymakers, architects, and educational institutions to improve safety standards and overall well-being within educational facilities.

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1. Introduction

Campus violence encompasses various forms, including sexual harassment, ragging, and disputes driven by caste or politics, which tragically can lead to fatalities or severe injuries. Educational institutions, entrusted with the responsibility of nurturing students' awareness of societal ills and fostering their intellect and ethical values, have been grappling to quell the surge of campus violence. The intricate socio-political fabric of India further fuels the factors that ignite such violence. This study delved into an exploration of Crime Prevention through Environmental Design (CPTED) concepts, particularly focusing on the third-generation principles. These principles encapsulate an inclusive blend of psychological and emotional considerations, championing community well-being, and fostering inclusivity. This entails integrating social aspects like community engagement, guardianship, and the maintenance of public spaces. Additionally, it underscores the pivotal role of community involvement and social cohesion in thwarting criminal activities within educational institutions.

The study aimed to comprehend the impact of these principles—whether their implementation or absence thereof—on the welfare, security, and efficiency of occupants within educational institutions. To achieve this, a thorough examination of the concepts of crime prevention through the built environment and third-generation CPTED principles was conducted through literature analysis. Subsequently, a comprehensive questionnaire was administered to various educational institution stakeholders, encompassing faculty, students, and others, to assess the effectiveness of CPTED principles in preventing crime.

The study hinges on investigating how the application of CPTED principles, especially those belonging to the third generation, contributes to the mitigation or prevention of criminal incidents within educational institutions. This evaluation was performed via both qualitative and quantitative analyses. The culmination of the study aims to present insights into the effectiveness of CPTED implementation in fostering safe and productive environments. The intention is to equip architects and educational institutions with empirical evidence to make informed decisions regarding the integration of CPTED principles, ensuring the safety and well-being of their occupants. This research draws reference from case studies where CPTED principles have been effectively implemented, enhancing the depth and breadth of the study's approach.

2. Literature Review

2.1. College Campus

A standard definition of a college campus is " the grounds of a school, college, university or hospital". Although it can also be referred to as a mind-set or as a physical property (Whitaker & Pollard, 2013). To simplify this debate, a system of levels of where and to whom violence can take place is necessary.

These levels of violence are:

a. The violence that happens to anyone within the geographical boundaries of campus, regardless of whether a constituent or an outsider is a target or an offender (Whitaker & Pollard, 2013).

b. The violence that happens between its constituents in their institutional and social roles, outside of its institutional boundaries (Whitaker & Pollard, 2013).

c. The violence that takes place in the institutional roles even though it happened to constituents outside both institutional boundaries and institutional roles(Whitaker & Pollard, 2013).1489 International Journal of Policy Sciences and Law Volume 1, Issue 3

d. The violence that is inflicted on others beyond their institutional roles and beyond the institutional roles and the institution's boundaries (Whitaker & Pollard, 2013).

e. Most college authorities agree that the college administration is responsible for the first level of violence. As one moves down the levels, away from institutional roles and responsibilities, the college administrators become less responsible.

f. Violence is thus a highly debatable concept in terms of levels.

g. For example, Analysis of type, level, factors and effects of campus violence are represented in table 1.

INCIDENT	TYPE OF VIOLENCE	LEVEL OF VIOLENCE	FACTORS UNDERLYING VIOLENCE	EFFECTS OF VIOLENCE
JAWAHARLAL NEHRU UNIVERSITY	Non-sexual physical attack	Level 1 i.e. violence that happens within the geographical area of a campus.	Political influence	Physical harm, social effect, economic effect, cognitive effect, etc.
JAMIA MILLIA ISLAMIA	Non-sexual physical attack	Level 1	Political Influence	Physical harm, economic effect, cognitive effect.
GARGI COLLEGE, DELHI UNIVERSITY	Bias-related violence	Level 1	Gender, Alcohol and substance abuse.	Social effect, Cognitive effect, Affective reactions.

Table 1. Analysis of type, level, factors, and effects of campus violence

2.2. Overview of CPTED Concept and Principles

Crime Prevention Through Environmental Design (CPTED) has evolved over several decades, with its roots dating back to the mid-20th century.

2.3. Difference between first, second & Third Generation CPTED Principles

Table 1. CPTED PRINCIPLES

S.No	Topic	FIRST GENERATION	SECOND GENERATION	THIRD GENERATION
1	Origin	1960s - 1970s	1980s - 1990s	2000s - Present
2	Concept introduced by	Architect Oscar Newman	Criminologist Timothy Crowe	-
4	Focus	Physical Design	Social Interaction & Management	Holistic Approach
5	Principles	This generation emphasizes the use of physical design elements to deter criminal activities.	In addition, it incorporates social interactions and management techniques.	In addition, considering psychological and emotional factors.
6	Strategies	It includes strategies like natural surveillance (increasing visibility), access control (limiting entry points), and territorial reinforcement (clearly defining private and public spaces).	It introduces concepts like guardianship (having responsible individuals present), community involvement, and maintaining an organized environment.	It emphasizes inclusivity, sustainability, and a deep understanding of the community's needs.
7	Aim	The aim is to reduce opportunities for crime by making spaces less attractive and accessible to potential offenders. This generation mainly focuses on altering the physical environment.	Beyond physical changes, this generation aims to encourage a sense of ownership and responsibility among occupants. By fostering a community that actively watches over the environment, it helps prevent crime.	The objective is to create environments that are not only safe but also conducive to well-being, comfort, and community interaction. Third-generation CPTED goes beyond crime prevention to promote quality of life and community cohesion.

2.4. Influence of CPTED Concept and Principles in India

The concepts of CPTED started to gain attention in India in the late 20th century. Urban planners, architects, and criminologists began to recognize the importance of designing environments that deter crime. The 1990s and early 2000s saw a growing interest among Indian academics and professionals in integrating CPTED principles into urban planning and design projects. Indian academics and researchers have contributed to the study of CPTED in the Indian context, discussing its relevance, challenges, and potential impact. CPTED's adoption in India aligns with global trends in recognizing the importance of creating safe, inclusive, and well-designed environments. Several organizations in India such as National Institute of Urban Affairs (NIUA), Safety and Security Society of India (SSSI), Smart Cities Mission (Ministry of Housing and Urban Affairs), Educational institutions like Indian Institute of Technology Delhi (IIT Delhi), Tata Institute of Social Sciences (TISS) Mumbai, India are working towards promoting and implementing Crime Prevention Through Environmental Design (CPTED) principles to create safer and more secure environments.

Table 2.

S.No	Themes based on	Common Themes studied with respect to CPTED by Researchers	Methodology
1	**Principles of CPTED**	The literature often discusses the core principles of CPTED, which include **natural surveillance, territorial reinforcement, access control, and maintenance.**	Researchers explore how these principles can be applied to design safer environments.
2	**Effectiveness of CPTED**	Studies examine the effectiveness of CPTED strategies in **reducing crime and enhancing community safety.**	Researchers might analyze crime data before and after CPTED interventions to determine their impact.
3	**Design & Planning Strategies**	Literature on CPTED delves into the design and planning strategies that align with its principles.	This includes discussions on architectural elements, landscaping, lighting, and the layout of spaces to discourage criminal activities.
4	**Psychological and Sociological Aspects**	Researchers often explore the psychological and sociological factors that influence crime and how they intersect with physical design.	This might involve examining how environmental cues affect behavior and perceptions of safety.
5	**Technological Integration**	The integration of technology into CPTED strategies is a growing area of interest.	Studies might investigate how surveillance systems, access control technologies, and data analytics can enhance crime prevention efforts.
6	**Cultural and Contextual Adaptation**	Literature might discuss how CPTED principles can be adapted to different cultural contexts and urban settings..	This could involve considering the needs and preferences of diverse communities
7	**Evaluation and Metrics**	The literature might focus on developing standardized metrics .	Evaluation frameworks to assess the effectiveness of CPTED interventions consistently across different studies.
8	**Case Studies**	Researchers often present case studies that showcase successful implementations of CPTED strategies in various locations.	These case studies provide practical insights into how theory translates into practice.
9	**Community Engagement**	Many studies emphasize the importance of involving communities in the CPTED process.	Engaging with residents and stakeholders can lead to more effective and sustainable crime prevention strategies

This research covered the following theme to analyse the data related to CPTED effectiveness in prevention of campus violence and creating safety and increased productivity by seeking insights and analysing the effects from the occupants of Educational Institutions.

a. Design and Planning Strategies

b. Psychological and Sociological aspects

c. Technological integration

d. Evaluation and Metrics

e. Case studies

f. Community Engagement

3. Literature Review

Crime prevention through environmental design (CPTED) strategies have received new attention and active usage in the planning of school buildings (Fujii et al., 2013). Systematic inquiries of the effects of CPTED in learning environments are still relatively new (Shariati & Guerette, 2019), but advocates hope that the approach will enable educators to succeed in their objective to reduce opportunity for violent behavior while allowing students to feel safe and comfortable (Lamoreaux & Sulkowski, 2020).

Scholars describe these crime prevention strategies as a comparatively cost effective yet meaningful set of interventions to address safety concerns (Vagi, 2018); they represent a less obtrusive alternative to the "fortification" of schools with potential to satisfy the competing goals of securing schools from external threats and students' psychological comfort (Lamoreaux & Sulkowski, 2020;Vagi, 2018). While CPTED strategies are generally considered promising tools to reduce opportunities for crime (Shariati & Guerette, 2019), research on CPTED in learning environments has moved from its potential for crime prevention towards the effects on students' fear of crime or violence at school (Lamoreaux & Sulkowski, 2021). Teenagers' fears are noteworthy because feeling unsafe affects school climate (Perumean-Chaney & Sutton, 2013), students' test scores, and attendance rates (Benbenishty et al., 2002;Lacoe, 2016;Milam et al., 2010)

4. Research Hypothesis

Assessing Educational Institutions by involving Occupants insights would improve Safety and wellbeing by bringing awareness about the concept of third generation principles of Crime Prevention through the built environment which reveals and supports physical planning, social and environmental improvements in the educational campus which could prevent campus violence.

5. Research Methodology

- Step 1:Identified a Problem
- Step 2: Research question
- Step 3: Literature study
- Step 4: Data Collection

- Step 4a: secondary data
- Step 4b: Primary data - Questionnaire - tools
- Step 5: Analysing the data (Qualitative and Quantitative analysis)
- Step 6: Findings
- Step 7: Conclusions and Recommendations

(add flow chart)

6. Approach

a. To analyse whether principles of CPTED is applied in the Built environment of Institutions Spaces.

b. Analysing the existing Built Environment scenario with respect to Safety

Questionnaire sample to be added here:

7. Analysis

7.1. To analyse whether principles of CPTED is applied in the Built environment of Institutions Spaces and what is the satisfaction level with respect to the occupants about the safety and wellbeing in different zones such as access, surveillance, physical planning and lighting aspects etc. Two types of survey questionnaire were prepared and circulated to the occupants of educational institutions only across India.

a. Survey form 1 tiled as "Crime Prevention through Enviornment Design Survey- Institutional space"

b. Survey form 2 titled as "Assessment Level 2 on Crime prevention in Educational Campus through Built Environment"

The research underwent a random sampling method, the total samples collected were 30, the feedback were taken from the occupants of educational institutions only and they were students, faculty, non teaching staff and others contributed their inputs for the survey taken.circulated online using google form.

**7.2.** The questionnaire were filled up by 18 institutions across India as listed below:

S.No	Name of the Institution	Location	Participants of Survey
1	SPA-D	New Delhi	
2	Nehru Institute of Information Technology and Management	Coimbatore	
3	ITM	Navi Mumbai	
4	MGM's Institute of Management Studies and Research New Mumbai	Kamothe, New Mumbai	
5	LPU	Punjab	
6	Jamia Millia Islamia New Delhi	Jamia Nagar ,South Delhi	
7	DAV Public school	Navi Mumbai	
8	Industrial Design	Architecture Block	
9	Integral University	Lucknow	Practicing Architects, Assistant Professors, Faculty, Students,Non Teaching Staff & Others
10	IGDTUW	Kashmere Gate	
11	NOVATR	Gurugram	
12	Sathyabama	Chennai	
13	Amity School of Planning and Architecture, Amity University Uttar Pradesh Noida	Noida	
14	University school of architecture and planning	Dwarka sec 16	
15	Indo global college of architecture	Chandigarh	
16	Odisha University of technology and research	Ghatikia, Bhubaneswar	
17	Integral University	Lucknow	
18	Delhi University	North campus	

7.3. Sample of questionnaire and its results in the form of graph is attached below:

1. Based on the first question, personal information such as name, their email id was collected for future reference.
2. Question was related to the name of the educational Institutions. Out of various applications of educational institutions, the highest scoring 14 percent of samples were received by students compared to faculty which was 7 percent and other players such as professionals, Professors and non staff residents were more or less 3.3 %. The total number of random samples collected across the country were 30 numbers only.
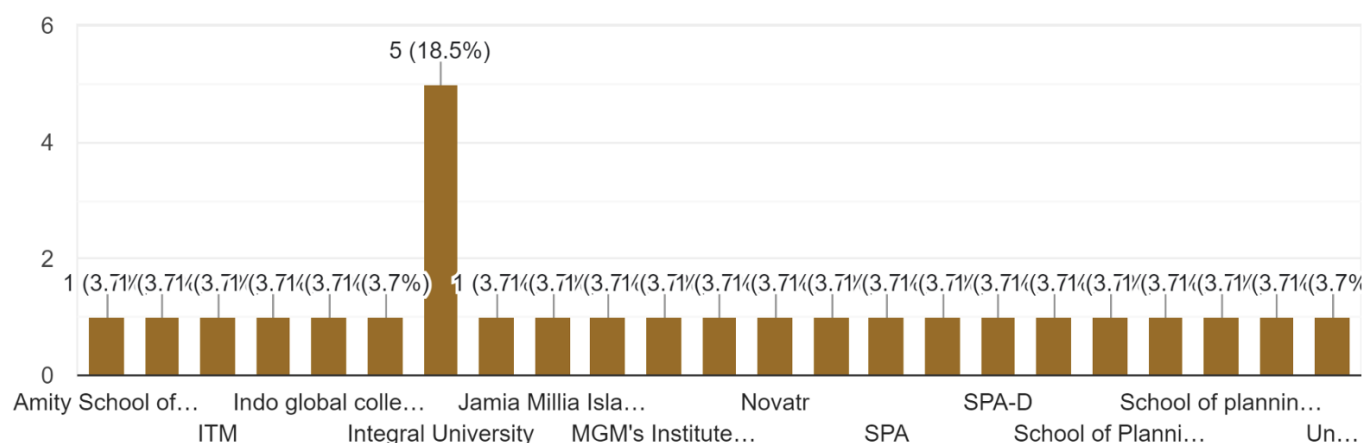
2.Are you a student / Faculty / Others working in Educational Institutions.

30 responses
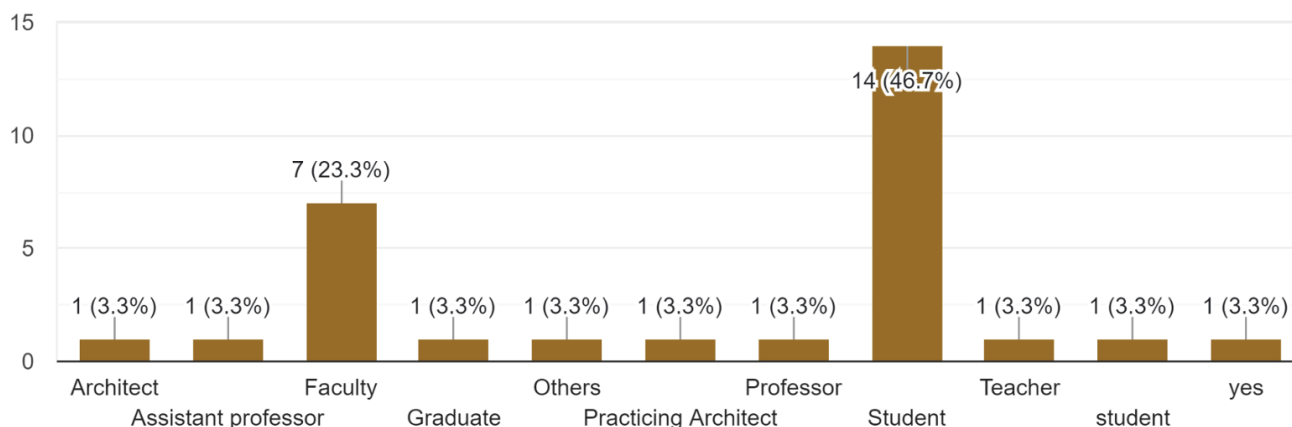
Bar chart 01: Types of Occupants participated in online survey

3. The next question understand the samples from various institutions across India

**Bar chart 02:** List of Various Institutions, where the occupants are associated with.

8. The survey 1 were designed under three Sections

8.1. Survey 1_Section A: To analyse whether principles of CPTED is applied in built environment of Institutional Spaces

i. Questions were related to understand the perception of occupants with respect to safety, impact of mental health in relation with spaces, reactions of existing scenario of educational institutions with respect to safety, awareness and application of CPTED principles in the campus.

1.How do you perceive the importance of institutional safety spaces?

30 responses
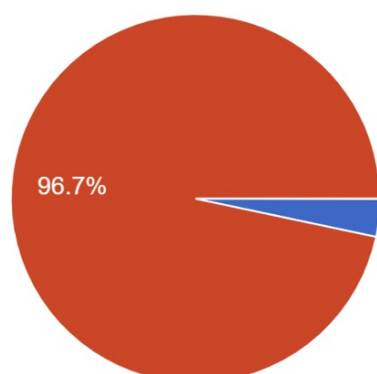
Legend:
- ● Negligible, as safety spaces are not necessary in educational institutions.
- ● Essential, as they provide a sense of security and well-being on campus.
- ● Indifferent, as safety spaces do not impact academic performance.

96.7%

Pie Chart 01: perception of institutional safety spaces

## 3. .How do people generally react to the presence of institutional safety spaces?

30 responses

26.7%
10%
63.3%
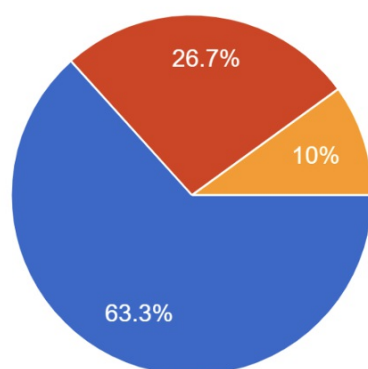
Legend:
- ● They embrace them as necessary tools for personal growth and development.
- ● They are indifferent and pay no attention to their existence.
- ● They consider them irrelevant to their overall college experience.

Pie Chart 02: Current Scenario and occupants perception of institutional spaces

4. What role does natural surveillance play in ensuring students' safety in institutional spaces?
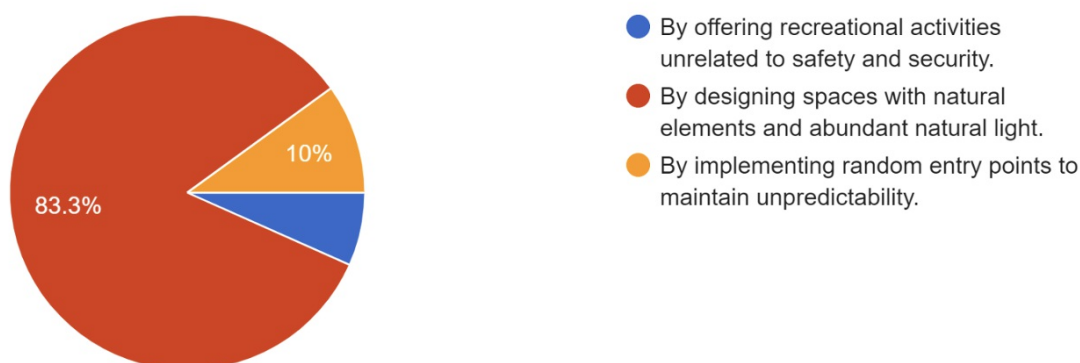
30 responses

50%
30%
20%
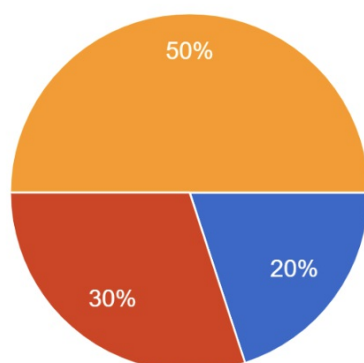
Legend:
- ● It increases the number of security cameras to monitor student activities.
- ● It promotes a secluded and hidden design of safety spaces.
- ● It encourages the presence of staff and students to observe the areas actively.

Pie Chart 03: Impact of Surveillance measures

5. How can the design of safety spaces using CPTED principles positively impact a person's mental well-being?
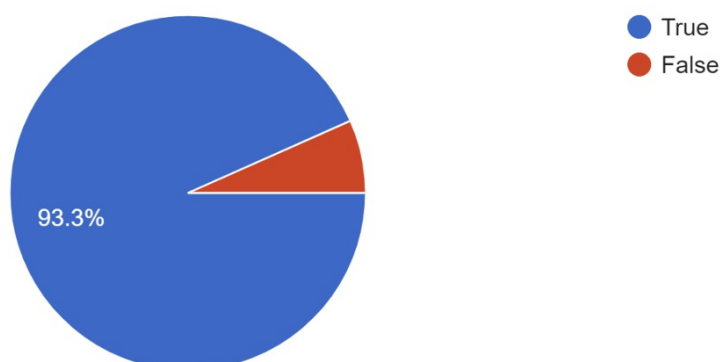
30 responses

- By offering recreational activities unrelated to safety and security.
- By designing spaces with natural elements and abundant natural light.
- By implementing random entry points to maintain unpredictability.

83.3%
10%

Pie Chart 04: CPTED Principles and its impact on mental wellbeing of occupants

8.2. Survey 1_Section B: Analysing the existing Built Environment scenario with respect to Safety

i. Questions were related to understand impact of design elements such as lighting, importance of directional aids and results of principles of CPTED implementation in educational campuses.

1.According to you, bright lighting in campus common spaces can lower the likelihood of criminal activity.

30 responses

- True
- False

93.3%

Pie Chart 5: Impact of Lighting component in common spaces

2.The majority of people concur that having obvious signs and directional aids can increase their sense of security and save them from becoming lost.
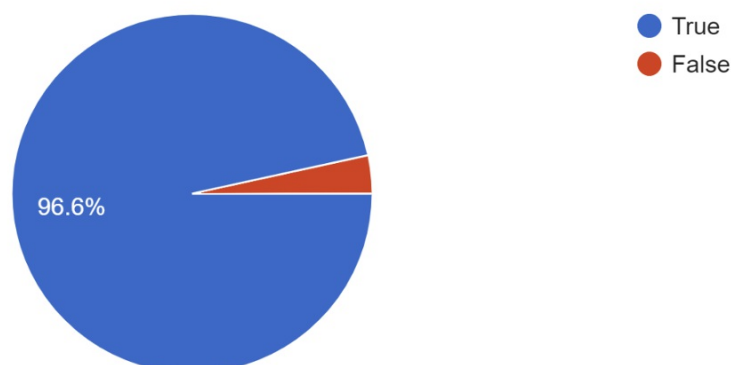
30 responses

● True
● False

100%
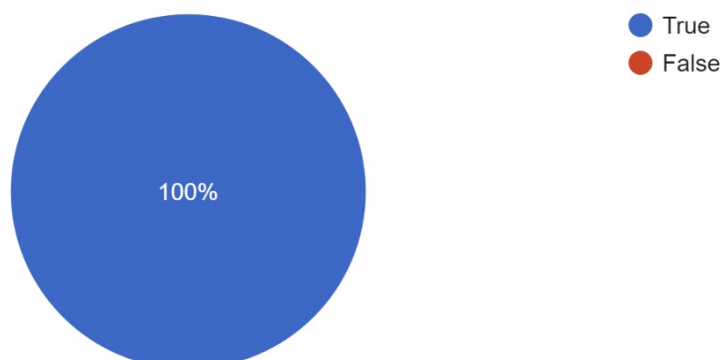
Pie Chart 6: Essence of Signs and directional aids

3. Do you feel that incorporating CPTED principles into the design of new buildings and campus renovations is crucial to maintaining a secure environment.
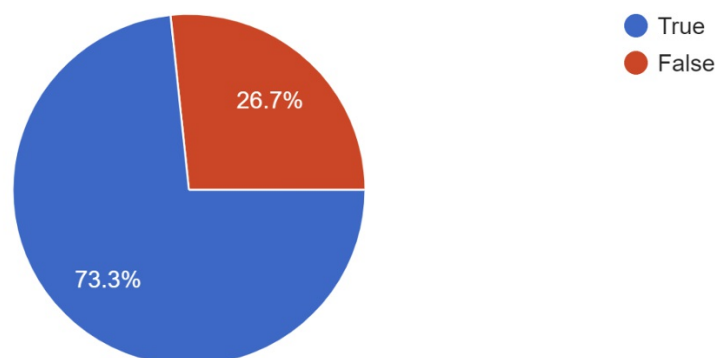
29 responses

● True
● False

96.6%

Pie Chart 07: Effect of Implementation of CPTED principles in the educational campuses

4.Many people think that adding features of natural monitoring, like big windows looking out onto outside areas, can discourage criminal activity the institutional spaces.
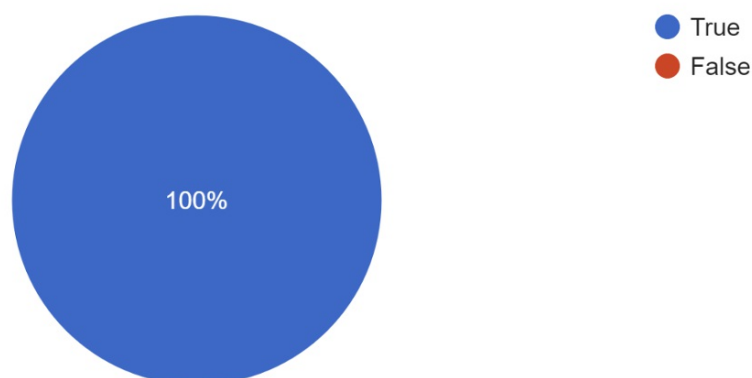
30 responses

Pie Chart 08: Application of Design elements such large window with natural surveillance effects

5.Do you believe that strategically placing panic buttons or emergency call boxes throughout campus can be helpful in urgent situations.

30 responses

Pie Chart 09: Use of Technology advancement to secure safety at the time of emergency

8.3. Survey 1_Section C: Insights from Occupants (Community Involvement in improvements)

a. Analysing the Design and planning strategies such as architectural elements with respect to lighting, security and safety environments.

1.What type of lighting would you prefer to see in the institution's exterior areas to improve safety and security?
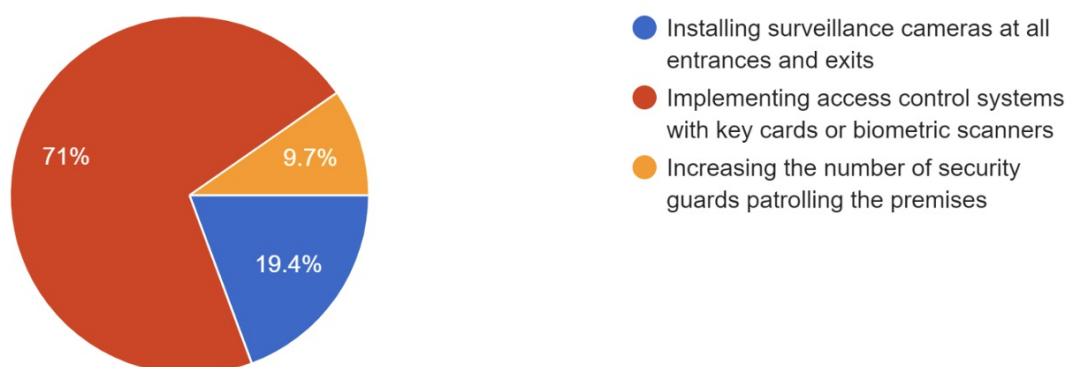
31 responses

- ● Bright and evenly distributed lighting throughout the campus
- ● Soft, dim lighting with strategic spotlights in key areas
- ● Motion-activated lights that turn on when someone approaches

48.4%

16.1%

35.5%

Pie chart 10: Safety and Security in the exterior space of Institution

2.Which security mechanism do you think would work the best to stop people from getting into buildings without permission?

31 responses

- ● Installing surveillance cameras at all entrances and exits
- ● Implementing access control systems with key cards or biometric scanners
- ● Increasing the number of security guards patrolling the premises

71%

9.7%

19.4%

Pie Chart 11: Security Mechanism

3. In order to promote a safer environment, how would you like to see the institution improve its landscaping?

30 responses
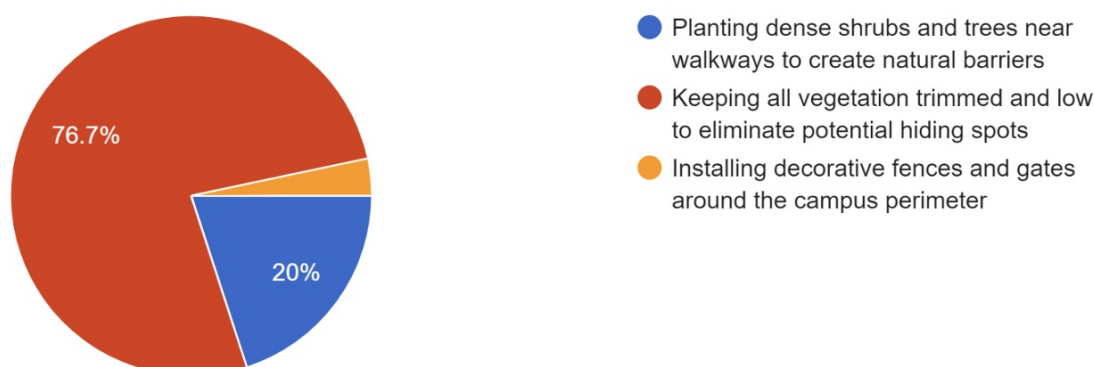
Pie chart 12: Analysis regarding Landscaping in the college campus

9. The survey 2

This survey was designed to know about psychological aspects of safety and security was analysed with respect to college Campuses along with the parameters of Safety, lighting, natural or technological surveillance, physical planning and access control and maintenance with illustrations of various functional spaces of institutional campuses.

9.1. Fear of crime experienced in and out of educational campus:

- Robbery Outside the campus gate
- Not safe for girls during night outside the campus
- Attack of Snakes and monkeys
- Inside campus felt safe but not immediate outside of the campus

10. Findings

10.1. Summary of Suggestions submitted by occupants from various Educational Institutions are as follows:

- Occupants suggested that Implementation of CPTED principles are mandatory, believing that it helps to stop external threats, internal malpractices and threats. Also mentioned, female students and staff would be benefited too.
- Supporting the point, the educational campus must be safe and secure for students and staff.
- Recommended for a chick list to ensure safety and comfort in the campus environment.
- As per their experience, it is informed that CPTED has been overlooked for a long time and the idea developing will bring positive results in securing a safe environment.
- Insisted different levels of safety to be incorporated in different zones based on the requirements and assessments.

- Most important spaces where surveillance is suggested in the dead zones or spaces where less people movement is happening.
- Use of sensory appliances are advised.

Overall from the survey type 1, it is understood that all the occupants were suggesting to implement CPTED Principles and considered safety and wellbeing with respect to the built environment mandatory. It is believed that their personal growth and development in benefitted. The occupants voted for natural surveillance in the physical planning, requested to incorporate emergency buttons in the system, improvement in security mechanism, and maintenance in the common areas with respect to landscaping.

8. Conclusions

Overall It is mandatory that CPTED principles are benefitting in the improvement of safety, security and wellbeing of Educational Institutions. Then their assessment of campuses needs to be implemented by involving occupants to scale the services provided and for the improvements to be made. Thus the study ensures that initiatives from educational institutions and involving the community in the development and maintenance phase would majorly prevent crime by following CPTED principles.

Acknowledgements

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Speaking to TOI, noted psychiatrist NN Raju said, "We have o..

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Psychiatrists attribute the reason for violence among studen..

https://www.lawyered.in/legal-disrupt/articles/campus-violence/