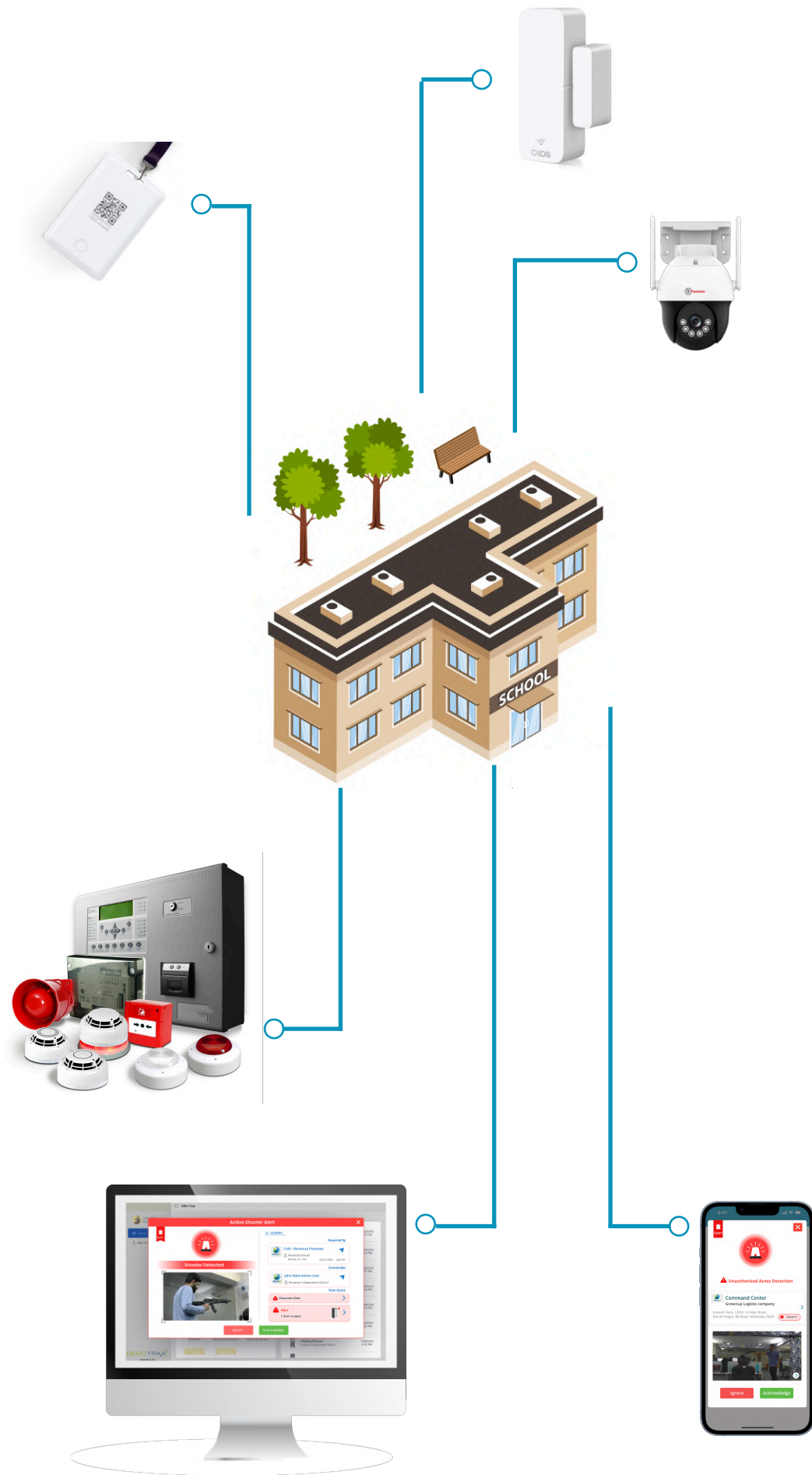




JK LAKSHMIPAT UNIVERSITY
Institute of Design
NAAC 'A' Grade Accredited

Blue berryfun pvt Ltd

Design An IOT Based Project “Active Shooter Alert”

Product & Saas company

Student : **Simranjeet Kaur**

Sponsor : **Blue berry fun pvt ltd**

Mentor : **Pritam Singh**

Consultant : Vishal Dhamu

Programme :

Masters of Design (M.Des)

Interaction Design

**THE
GRADUATION
PROJECT 2025**

The Evaluation Jury has recommended **Simranjeet kaur**
for graduation from Institute of Design, **JK LAKSHMIPAT UNIVERSITY**
with specialization in **Interaction Design**

Herewith, for the project titled “Active Shooter Alert” on fulfillment of requirements by

Jury Chairman _____

Jury Member _____

Jury Member _____

Subsequent remarks regarding fulfillment of requirements

Dean, Institute of
Design
JK Lakshmipat
University

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Date: 06/12/2025

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Objective



To develop a user-centered IoT-enabled safety and communication system for schools in North America, addressing the rising concerns of school violence, bullying, and emotional insecurity among students, teachers, and parents.

Client overview

The client is a U.S.-based individual with a strong personal and professional interest in addressing the rising threat of violence in educational institutions across North America. Motivated by real-life incidents involving school shootings and bullying, the client has commissioned a solution that can proactively protect students while also supporting educators and parents.



Problem Statement

“Jerry, a 12-year-old student, is terrified of going to school due to the growing threat of terror attacks in educational institutions. This fear is impacting his mental health, focus, and overall well-being. There is a critical need for effective safety measures and emotional support systems to protect students and help alleviate their anxiety about school violence.”



Terror Attack in school

Defining Context

“ Rising school violence and terror threats create fear and anxiety, affecting focus, well-being, and school attendance. While security measures exist, they often overlook emotional impact. This research explores ways to improve both safety concern and peace of mind in schools.”



Research on terror attack happen in Past Years

Terror Attacks

School shootings have tragically become a recurring problem across various states. As of July 22, 2024, California reported the highest number of school shootings since 1966, with 270 incidents. Texas followed closely with 225 shootings during the same period.



Real Time Incident Cases



When Did School Safety Concerns Emerge?

- School safety has been a concern in the U.S. for decades, with significant attention arising from various incidents

Marjory Stoneman Douglas High School – Parkland, Florida (2018)

- **Date:** February 14, 2018
- **Casualties:** 17 killed, 17 injured
- **Perpetrator:** Nikolas Cruz, 19
- **Details:** Cruz, a former student, opened fire with an AR-15-style rifle.



Statements of Cruz

Behavioral Health

Statement of Cruz to another student

Cruz told one student, **“I’m so tired of everyone being mean to me, I just can’t take it, I want to shoot up the school.”** When the student confronted Cruz about this, Cruz said he was joking. This same student had information about Cruz killing animals for fun.

Hatred toward specific races or social groups.

Cruz had been known to make statements such as, **“I wish all the Jews were dead,”** or, in reference to the shooting at the Pulse nightclub, **“I’m glad they killed all those gay people.”**

More Incidents

Robb Elementary School – Uvalde, Texas (2022)

- **Date:** May 24, 2022
- **Casualties:** 21 killed (19 students, 2 teachers), 17 injured
- **Perpetrator:** Salvador Ramos, 18
- **Details:** Ramos barricaded himself in a classroom, leading to a prolonged standoff.



University of Nevada, Las Vegas (2023)

- **Date:** December 6, 2023
- **Casualties:** 3 killed, 1 injured
- **Perpetrator:** Anthony Polito, 67
- **Details:** Polite, a former college professor, opened fire on campus before being killed by police.

ANTHONY POLITO



Florida State University – Tallahassee, Florida (2025)

- **Date:** April 17, 2025
 - **Casualties:** 2 killed, at least 6 injured
 - **Perpetrator:** Phoenix Inker, 20
 - **Details:** Ikner, a student and stepson of a sheriff's deputy, used his stepmother's former service weapon in the attack.
-

Perry High School Shooting (2024)

On January 4, 2024, a 17-year-old student in Perry, Iowa, shot five students and three staff members before turning the gun on himself. One student and one staff member later died from their injuries.

La Loche Community School Shooting (2016)

In Saskatchewan, Canada, a 17-year-old gunman killed four people, including two teachers, and injured seven others. He was subsequently sentenced to life imprisonment.

Recent Year Incident

Virginia Case (April 2025)

In Saskatchewan, Canada, a 17-year-old gunman killed four people, including two teachers, and injured seven others. He was subsequently sentenced to life imprisonment. Virginia Case (April 2025): A third-grade student in Spotsylvania, **Virginia, brought an unsecured handgun to school,** which accidentally discharged in a classroom. The parents were charged with child endangerment and possession of an unsecured weapon.



Hale was a former student at Covenant Church School.



Hale attended the school as a child and had some of the happiest memories of her life there.

Zila / MEGA

“I hate the American people,” she wrote. “America is not the land of the free, it’s a land full of idiots. It will only get worse in this country, not near enough gods like me. America and its people all destined to soon be destroyed.”

The transgender school shooter who murdered six people at Nashville’s Convent School in 2023 raged about hating America and wanting to “kill all the white kids” in over 1,000 pages of newly revealed diary entries.

Audrey Hale, 28, left behind 16 notebooks filled with deranged writings detailing self-loathing and racial hate, repeating how she wanted “kill my own race” and “destroy all the white people who are teachers.”

“Being white sucks, but being black is so cool. Black people should rule. White people should fall, every white person who lived and died. I hate you all,” wrote Hale, who was white.



Hale attended the school as a child and had some of the happiest memories of her life there.

Zia / MEGA

Hale legally purchased seven firearms from five local gun stores. Three of these firearms were used in the attack: a 5.56 Lead Star Arms Grunt AR-15–style pistol, a 9mm Kel-Tec SUB-2000 pistol carbine, and a 9mm Smith & Wesson M&P9 Shield EZ pistol.

On the day of the attack, Hale entered the school by shooting through a glass door and proceeded to open fire on the second floor. The attack lasted approximately 14 minutes before responding police officers fatally shot Hale.

(The regulation of firearms and the reasons behind the legal access to guns can be traced back to historical, constitutional, and political factors.)

The Second Amendment and Historical Context

- In the United States, the right to own guns comes mainly from the Second Amendment of the U.S. Constitution.

It says

- Back then, the U.S. believed strongly in people being able to protect themselves and stand up to unfair government control.
- Guns were a normal part of life—for self-defense, hunting, and serving in the military.



Legal Age for Gun Ownership

The legal age to purchase a firearm in the United States is determined by federal law

- **18 years old** to purchase rifles and shotguns.
- **21 years old** to purchase handguns from a licensed dealer (under the Gun Control Act of 1968).

Who Can Own Guns?

Generally, U.S. citizens and legal residents can own firearms, but there are restrictions on certain individuals. These restrictions include:

- **Felons:** Individuals convicted of felonies are prohibited from purchasing or owning firearms.
- **Mentally Ill Individuals:** Those who have been adjudicated as mentally ill or committed to a mental institution are prohibited from gun ownership.

- **Illegal Immigrants:** Non-citizens without legal immigration status cannot legally possess firearms.
- **Domestic Abusers:** People convicted of domestic violence offenses or under protective orders are barred from owning firearms.

– Gun Ownership in the Home

Many U.S. citizens own firearms for self-defense, hunting, or recreational purposes. According to Pew Research, 30% of Americans own a gun, and many of these firearms are kept in private homes.

Self-Defense: Gun rights advocates argue that firearms are necessary for self-defense, especially in regions where police response times may be slower or in areas with higher crime rates.



Legal and Political Developments

- **1982 – The Firearm Owners Protection Act (FOPA):**

This act was a landmark piece of legislation that allowed for greater civilian access to firearms while also establishing regulations on how firearms should be purchased and transported across state lines.

- **1994–2004 – The Federal Assault Weapons Ban:**

This was a 10-year ban on assault-style rifles and high-capacity magazines, but it expired in 2004 and has not been renewed.

- **2012 – Sandy Hook Elementary School Shooting:**

The tragedy led to increased gun control debates, especially around military-style assault rifles, though significant changes to gun laws were not passed at the federal level.

– Why Are Guns Allowed in Homes?

The debate over gun ownership in homes stems from multiple factors:

• Cultural Reasons:

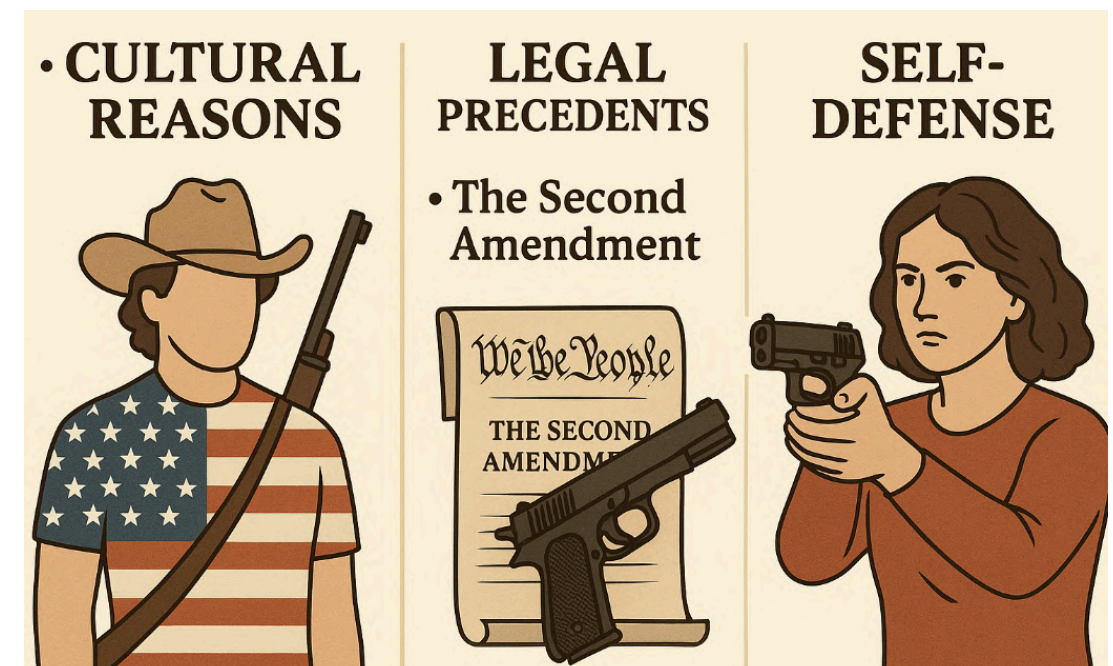
Guns are seen by many as a part of American culture and heritage.

• Legal Precedents:

The Second Amendment is seen by gun rights advocates as an essential constitutional right.

• Self-Defense:

Many argue that firearms are a necessary tool for personal safety, especially in situations where law enforcement might be delayed or unavailable.



Recent Proposals and Legislative Debates (Post-2020)

After high-profile shootings, such as the Parkland shooting (2018) and the Uvalde shooting (2022), there have been calls for new federal gun control laws. Some proposed regulations include:

- **Universal Background Checks:** Expanding background checks to include private sales and gun shows.
- **Assault Weapon Ban:** Reintroducing a federal ban on assault-style rifles, similar to the 1994 ban.
- **Magazine Capacity Limits:** Limiting the capacity of magazines to reduce the number of rounds that can be fired without reloading.

Why Is School Safety a Concern?

The rise of school shootings, mental health challenges, and new threats in the digital age have contributed to the increasing importance of ensuring students are safe at school.

Increase in School Shootings

One of the most alarming issues facing schools in recent years is the rise in school shootings. According to data from **Managed Methods**, the number of **school shootings** has risen dramatically, with **304 incidents** reported in 2022 alone.

How Are These Issues Being Addressed?

Legislation and Funding: Federal and state governments have implemented laws and provided grants to improve school security infrastructure and protocols.

SchoolSafety gov: This federal initiative offers resources and guidance to help schools create safer environments.

Security Measures: Schools have adopted various measures, such as surveillance systems, controlled access points, and the presence of school resource officers.

Mental Health Programs: There's an increasing emphasis on providing mental health resources and support within schools to address student well-being.



Research Findings

Bullying and harassment

Bomb Threats

• Gun violence / Active shooters

• Hate crimes and discrimination

• Sexual assault and harassment

• Suicide and mental health risks

• Gang-related violence

• Drug and substance abuse

• Mental health crises

Antidepressant Use Increased

Finding: After a deadly school shooting, the use of antidepressants among young people within 5 miles of the incident increased by 21%.

Survivor's Guilt and PTSD Cases

Finding: Up to 30% of students who survive a school shooting develop PTSD symptoms months or even years after the event.



Findings

Student Reactions and Common Fears

- Isolation, reluctance to attend classes

- Hyper vigilance and emotional breakdowns during drills

- Fear of death or injury at school

- Fear of bullying or peer violence

- Distrust in school authorities or police

Gun Culture in North America

Gun Ownership is Very Common, Especially in the U.S.

- In the United States, owning guns is legal and seen by many as a basic right under the Second Amendment of the U.S. Constitution.
- About 42% of American households report having at least one gun at home.

Cultural Beliefs about Guns

- Many American families view guns as:
- A way to protect their family (67% of gun owners say this).
- A symbol of freedom and independence.
- A tool for hunting or sport shooting.

Key facts about Americans and guns

BY KATHERINE SCHAEFFER



A customer shops for a handgun at a gun store in Florida. (Joe Raedle/Getty Images)

Guns are deeply ingrained in American society and the nation's political debates.

The Second Amendment to the United States Constitution guarantees the right to bear arms, and about a third of U.S. adults say they personally own a gun. At the same time, in response to concerns such as [rising gun death rates](#) and [mass shootings](#), the U.S. surgeon general has taken the unprecedented step of [declaring gun violence a public health crisis](#).

Here are some key findings about Americans' views of gun ownership, gun policy and other subjects, drawn from Pew Research Center surveys.

In the United States, gun culture is deeply rooted in **ideas of freedom**, protection, and sport. **Approximately 42% of households own guns**, and many teach children about firearms from a young age (Pew Research, 2021). However, unsafe storage practices and limited mental health support at home increase the risk of **students bringing weapons to school**.

Mental Health Impact on Student

Anxiety Disorders

Fear of violence can make a kid constantly on edge — sweaty palms, racing heart, trouble breathing, or even panic attacks just thinking about going to school.

Post-Traumatic Stress Disorder (PTSD)

Even if they aren't physically hurt, witnessing violence or lockdown drills can traumatize them. Nightmares, flashbacks, fear of loud noises are common symptoms.

Depression

Feeling unsafe can lead kids to deep sadness, hopelessness, withdrawing from friends, losing interest in activities they once loved.

Aggression or Anger

Sometimes fear flips into anger. Kids might lash out, fight, or bully others because deep down they feel powerless and scared.

Hyper vigilance

Some kids become overly alert — always scanning rooms for exits, suspicious of other students, not trusting anyone.

Separation Anxiety

Fear of leaving their parents to go to school, crying fits in the morning, feeling physically sick (headaches, stomachaches).

Behaviour Impact on Student

- Avoiding school (pretending to be sick)
- Difficulty concentrating in class
- Acting out or becoming disruptive
- Getting into more fights or arguments
- Becoming clingy with family
- Carrying objects for "protection" (which could escalate danger)
- Self-harm or talking about death (in extreme cases)

Addresses Problem

- Terror Attacks in Schools
- Students Bringing Weapons to School
- Bullying Culture in Schools
- Mental Health Impact on Students
- Gun Culture in Northern America



Supporting Systems (Things that are supposed to help but sometimes fail)

- School security systems (metal detectors, lockdown drills)
- Mental health programs (counseling centers, therapy groups)
- Gun safety laws and regulations
- Anti-bullying policies
- Emergency response systems
- Parent-teacher communication
- Media coverage (raises awareness but sometimes causes fear)

Pain Points (Where problems happen)

- Easy access to guns at home

- Lack of mental health support in schools

- Weak enforcement of anti-bullying rules

- Gaps between students and teachers (trust issues)

- Slow response to threats (real or digital)

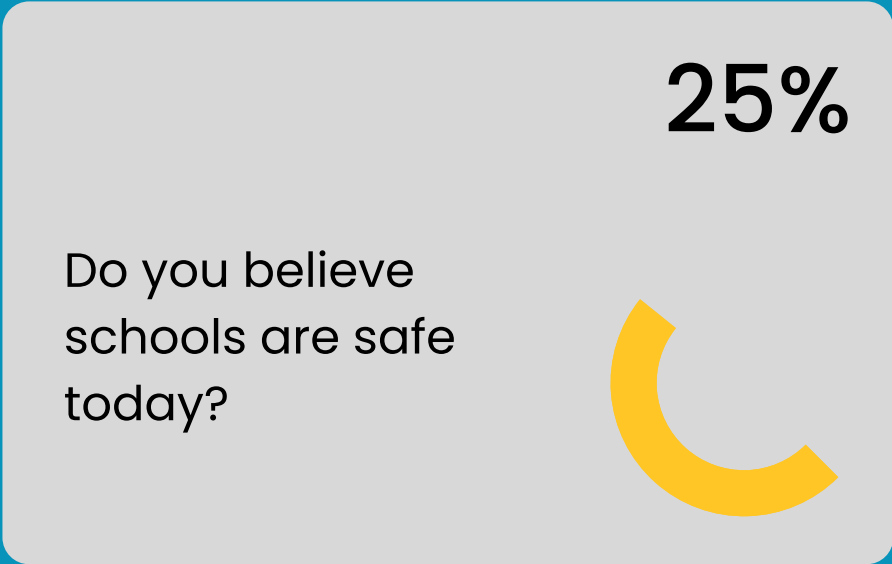
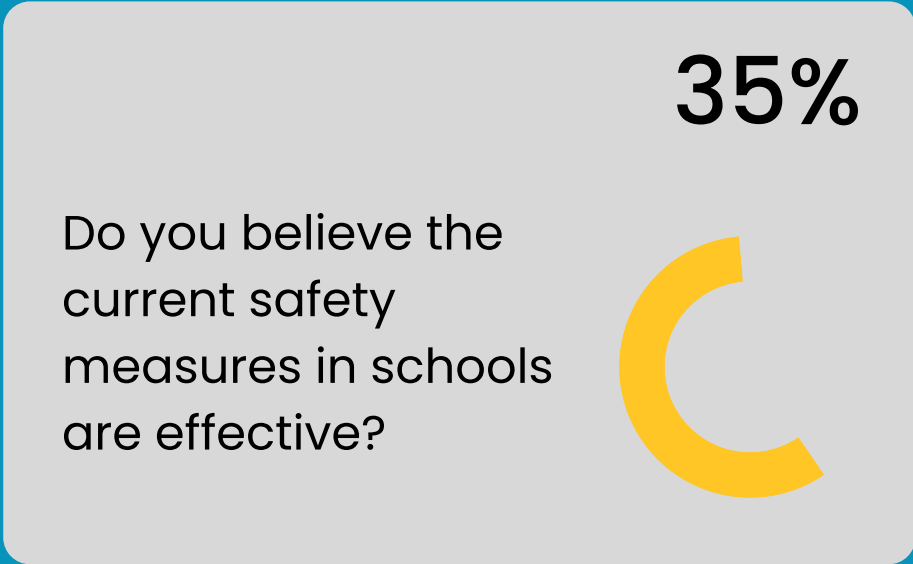
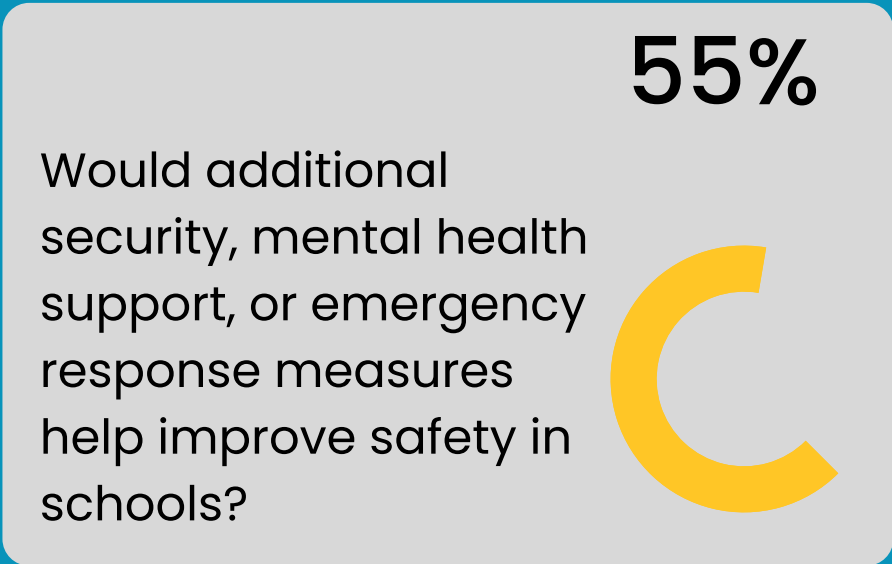
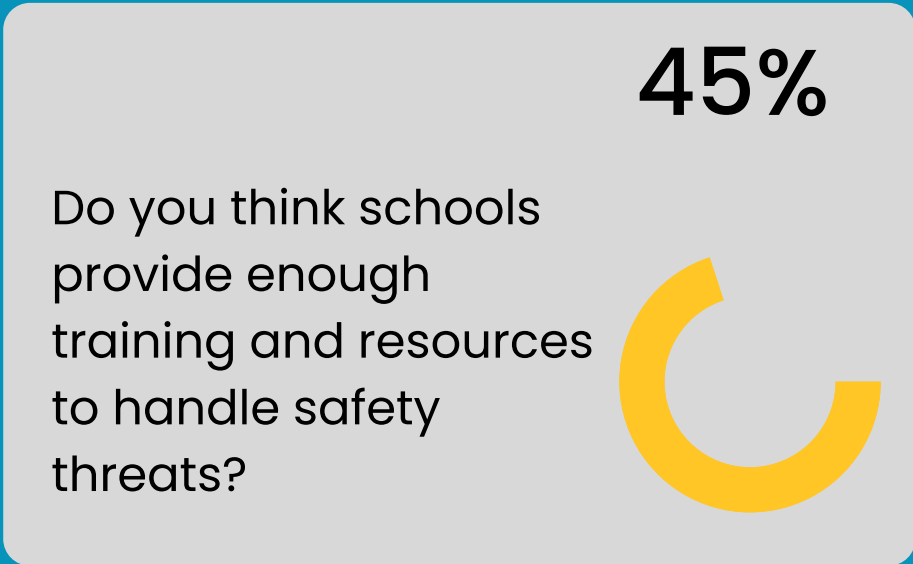
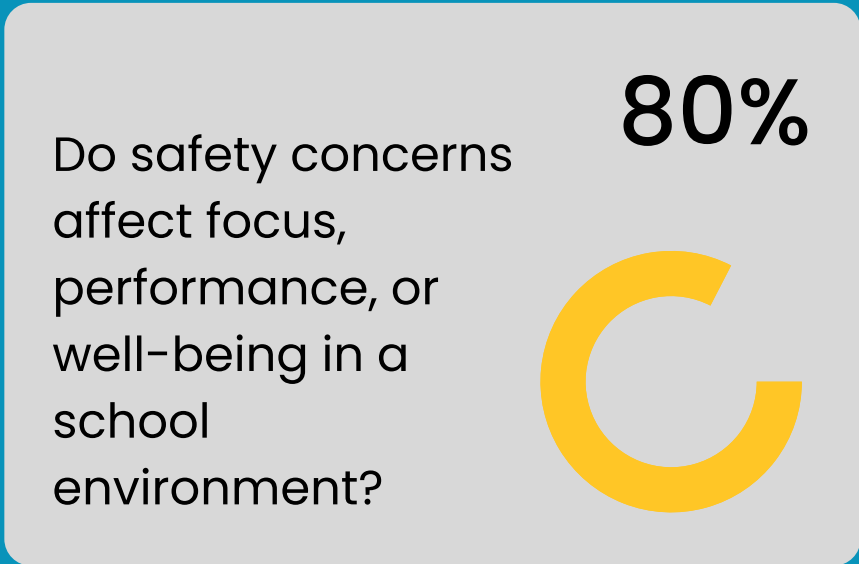
- Misinformation or sensationalism by media

- Fear culture growing among students and parents

Primary Research Methods

Online surveys
using Google Forms

Focused- Group
and Selective Interviews



What people say



"Sometimes we have arguments with the school bus driver."

"they should discuss safety with parents"

"sometimes children misbehave with us and lated on denied and we do not have any proof"

"We're expected to stay calm, but how can we without any real information?"

"We have no other option except to belive them"

"Schools should have a direct communication system"

"How do we know if the school is safe or not"

"school just says everything is safe, but how do we know"

"There should be a direct and reliable communication system between the school and parents."

"No they never guide us if any emergency come in school"

"If there's an emergency, we should be informed immediately."

"In case of a real emergency, we don't know how we're supposed to react."

"I want my children to be in a truly safe environment."

"There's no clear way to contact someone if something goes wrong during school hours."

"I wish schools would do safety drills and also involve parents in them."

Understanding the problem from multiple perspectives is essential.

The key stakeholders in this research include :

Primary User

Parents: Concerned about their child's well-being and safety.

School Administrators & Policy Makers: Responsible for implementing safety measures.

Teachers and school staff need effective tools to enhance security and support

Secondary User

Jerry (a 12-year-old student experiencing fear)

Existence Safety concerns schools follow



"CCTV cameras to monitor school premises."



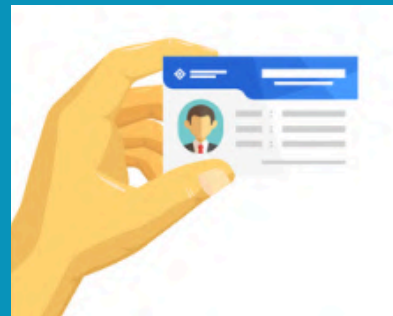
"Schools keep main gates locked and require visitors to check in at the office."



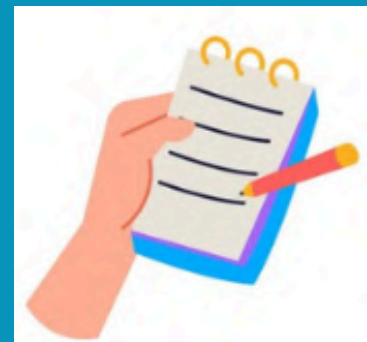
"Fire extinguishers, smoke alarms, and regular fire drills."



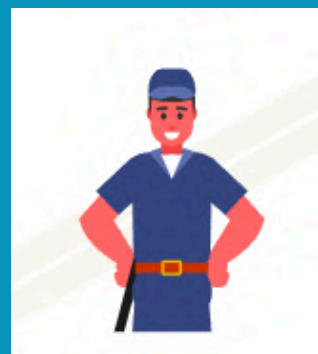
"Encouraging students to report bullying"



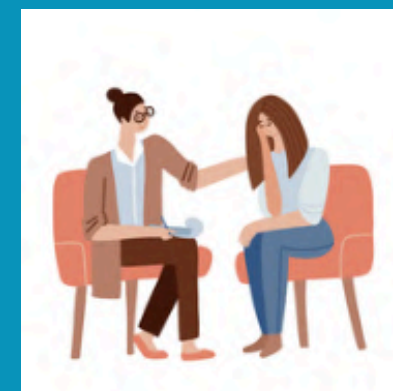
"Restricted entry points with ID card checking"



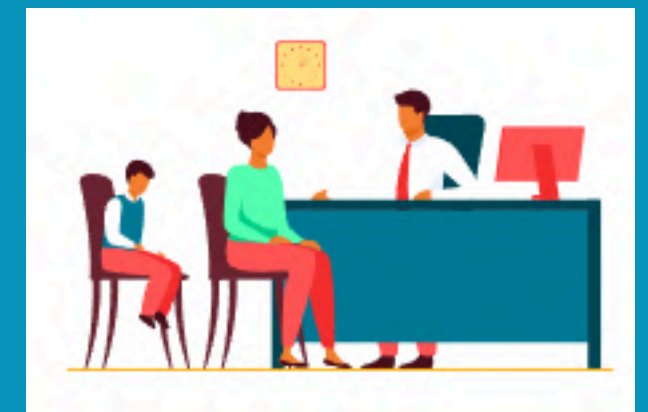
"Entry gate Registration check in"



"Watchman on entrance"



"Schools provide basic mental health support through school counselors."



"Regular Parent-Teacher Meetings: Discussions on student behavior, well-being, and any safety concerns."

User Persona



Name: Jerry Thompson
Age: 15
Grade: 10th Grade
Location: Texas, USA

Background: Jerry lives in a suburban area with his parents, He's a thoughtful and observant student who performs well academically but is currently dealing with rising anxiety about school safety due to repeated exposure to news of school violence.

Goals

- To feel physically and emotionally secure in school.
- A way to quietly report bullying or potential danger without confrontation.
- Reassurance that his concerns are taken seriously by adults.
- A safe, distraction-free environment to learn and engage socially.

Motivations

- Wants to feel that school is a protected space, like home.
- Wants to belong and be accepted by friends without fear or judgment.
- Being able to take action when something feels wrong helps him feel in control.
- Believes that feeling safe will help him focus better and do well academically.

Frustration

- Fear of active shooter situations due to recent real-life events.
- Nervous in certain areas of the school, like bathrooms or empty corridors.
- Hesitant to speak up — fears judgment or retaliation if he reports bullying.
- Feels teachers are also afraid, which weakens his sense of security.

Behavior

- Highly aware of his surroundings, slightly hypervigilant.
- Quiet in class but active online — uses social media as an outlet.
- Prefers tech-based solutions for privacy and control.
- Looks for subtle cues from teachers and staff for emotional safety.

Empathy mapping

Name: Alex
Age: 15 years
Grade: 10th

Says

"School is fine, but sometimes things feel a bit chaotic."
"I just want to focus on my studies and have fun with friends."
"I don't usually think about safety, but it's good to know we have precautions."

Thinks

"School should be a place where I feel comfortable."
"I hope there are good systems in place if anything ever happens."
"It's important to have a balance between learning and feeling safe."



Does

"Goes to class regularly and follows school routines."
" Interacts with teachers and classmates as usual."
" Participates in school activities without major concerns about safety."

Feels

"Generally comfortable in school."
"Focused on studies, friendships, and extracurriculars."
"Aware of safety measures but not overly concerned on a daily basis."

Empathy mapping

Name: Ms. Mayor

Age: 39 years

Role: Parent

Says

- "I want to be sure my child is safe at school."
- "It would be helpful to get real-time updates during emergencies."
- "Schools should have clear safety policies that parents can understand."

Thinks

- "There should be stronger security measures in place."
- "What can I do to support my child's sense of safety?"
- "Good communication between schools and parents is essential for safety."



Does

- "Regularly checks school emails, news, and updates on safety policies."
- "Discusses safety concerns with teachers and school staff."
- "Encourages their child to talk about their experiences and feelings regarding safety."

Feels

- "Concerned about their child's well-being in school."
- "Protective and wanting to ensure a secure learning environment."
- "Sometimes uncertain or frustrated if clear safety measures are not communicated."

Empathy mapping

Name: MR. Taylor

Age: 35 years

Role: 10th Grade English Teacher

Says

"I want to be sure my child is safe at school."

"It would be helpful to get real-time updates during emergencies."

"Schools should have clear safety policies that parents can understand."

Thinks

"There should be stronger security measures in place."

"What can I do to support my child's sense of safety?"

"Good communication between schools and parents is essential for safety."



Does

"Regularly checks school emails, news, and updates on safety policies."

"Discusses safety concerns with teachers and school staff."

"Encourages their child to talk about their experiences and feelings regarding safety."

Feels

"Concerned about their child's well-being in school."

"Protective and wanting to ensure a secure learning environment."

"Sometimes uncertain or frustrated if clear safety measures are not communicated."

USER JOURNEY MAP

Stage	Activity	Emotions	Pain Points	Opportunities
Wake up	Get ready for school	😐 Neutral, 😟 Slight Anxiety	Anxiety about the day ahead (possible threats)	Morning mental health check-in via app
Bus ride to school	Commute via school bus	😟 Uneasy	Thinking about past incidents seen on news	Calm content/podcasts for students
Entering school	Pass through security, bag checks	😟 Nervous	Metal detectors create fear, not security	Make security less intimidating
First classes	Attending lectures	😟 Distracted	Hard to focus due to anxiety	Emotional support break slots
Hallway interaction	Moving between classes	😱 Fearful, 😟 Excluded	Bullying or overhearing violent jokes	Peer mediation programs
Lunchtime	Eating with friends or alone	😌 Relieved / 😟 Lonely	Fearful of cafeteria fights, cliques	Buddy system for lonely students
Afternoon classes	Study time	😟 Tired, 😟 Alert	Tiredness + mental exhaustion	Mental health breaks in schedule
End of school bell	Preparing to leave school	😌 Relieved	Anxiety of any last-minute incidents	Positive end-of-day reflections
Bus ride home	Traveling back home	😫 Exhausted	Processing the day's stress	Decompression programs
Arrive home	Family time	😌 Safe	Hesitant to share true feelings	Parent-student communication guides

Focused Area Problems From Students' Perspective

Fear of School Violence

Anxiety about shootings or attacks happening during school hours

Mental Health Struggles

Rising levels of depression, PTSD, and survivor's guilt after incidents.

Unsafe School Culture

Bullying, exclusion, and aggressive behavior in hallways and classes.

Lack of Emotional Support

Feeling isolated — no one (teachers or systems) truly supporting their emotional health at school.

Over-policing and Intimidating Security

Feeling scared of school security protocols instead of feeling safe.

Responsibility without Training

Teachers are expected to handle lockdowns, trauma, and bullying without proper emotional or tactical training.

Fear for Their Own Safety

Teachers themselves are scared during real or false threats.

Emotional Burnout

Handling their own anxiety + students' mental health causes extreme emotional fatigue.

Lack of Resources

Schools often don't have enough counselors, wellness programs, or funding for safety infrastructure.

Daily Anxiety About Child's Safety

Constant fear when sending their child to school.

Lack of Trust in School Systems

Feeling that schools aren't doing enough to guarantee physical and emotional safety.

Guns Accessible at Home + Peer Influence

Fear that children may access guns easily at home or through peers.

Mental Health Ignored or Under-supported

Schools are not proactive — only reacting after tragedies happen.

Poor Communication from Schools

Inadequate updates about incidents, drills, or real threats.

How might we?

“How might we create safer and more reassuring school environments to reduce students’ fear of violence?”

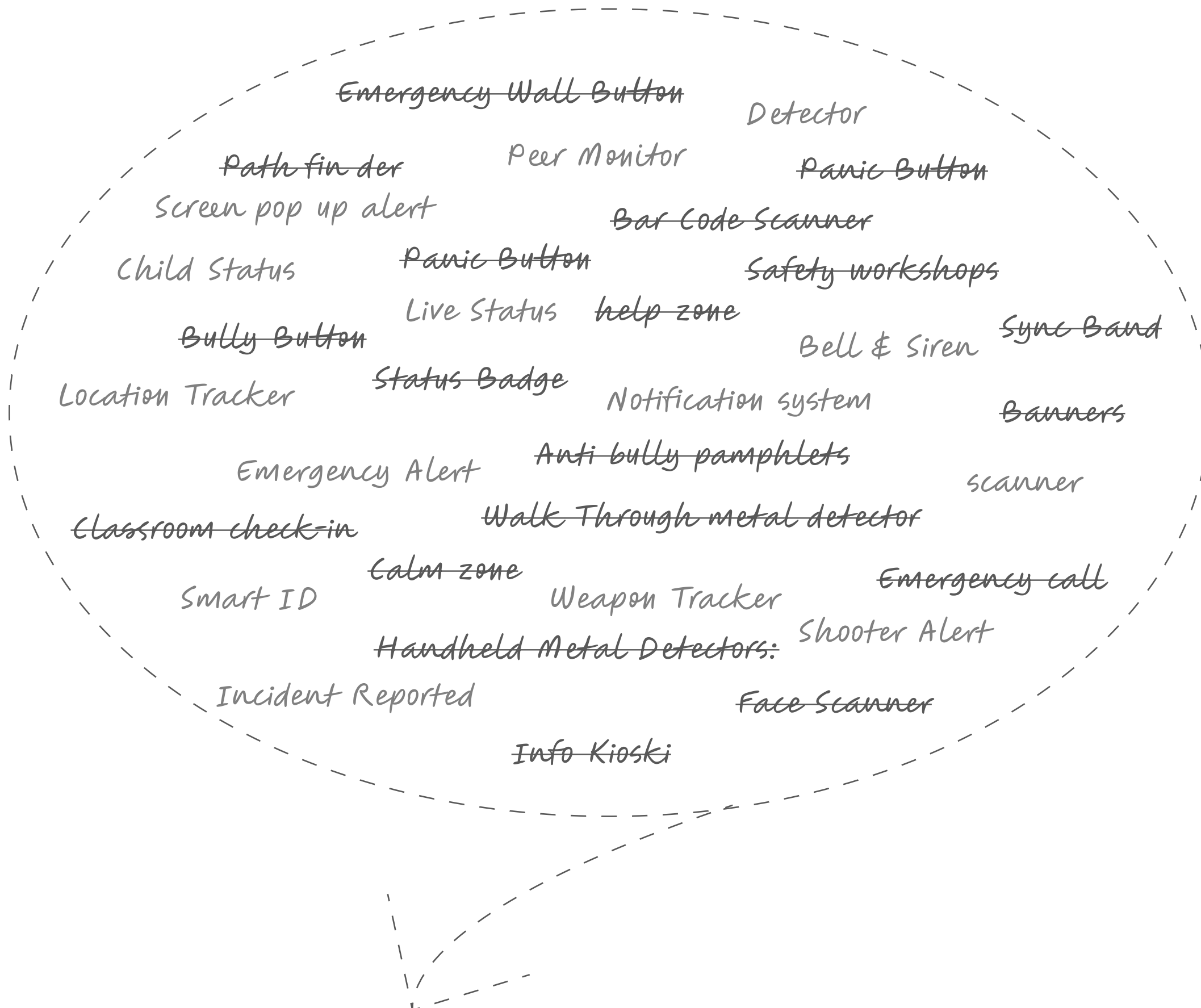
“How might we empower teachers to manage student anxiety and potential threats without emotional burnout?”

“How might we foster positive peer relationships to minimize bullying and feelings of isolation within schools?”

“How might we improve communication between schools, parents, and students to build trust and ensure preparedness during crises?”

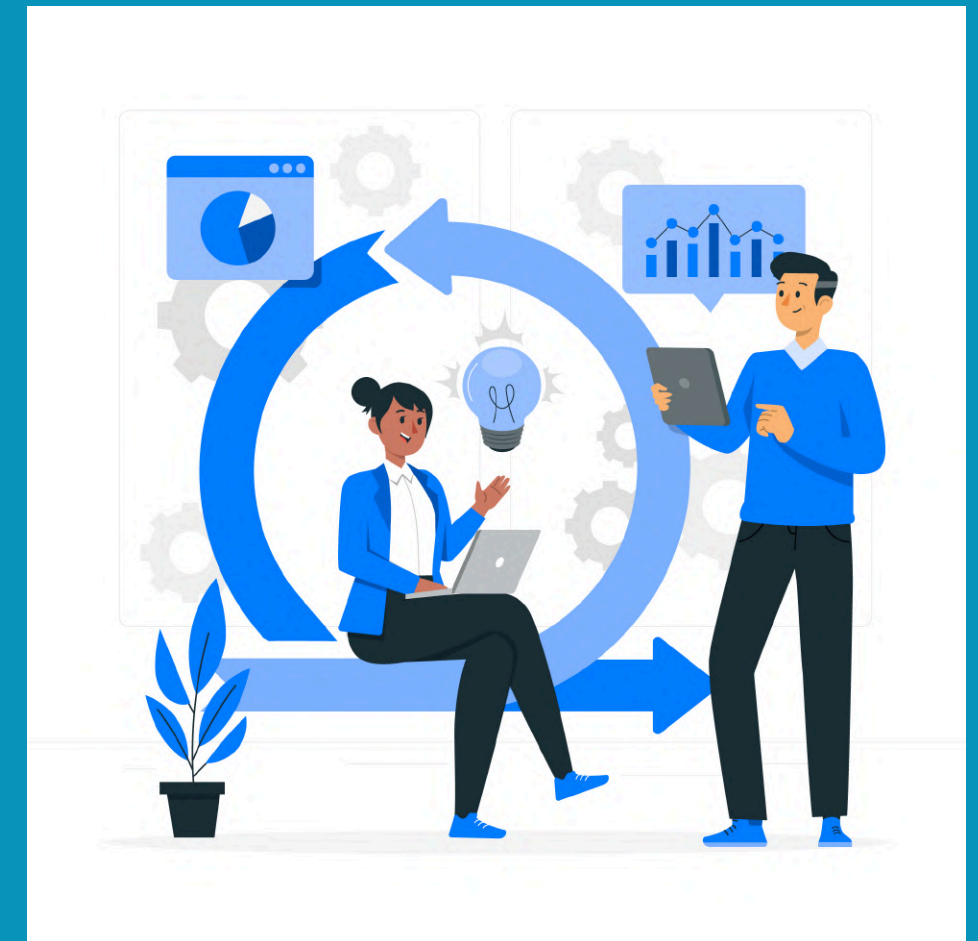
“How might we empower parents with greater confidence and clear communication regarding their child's safety and emotional well-being at school?”

Brainstorming



Proposed Solution

“This project proposes an IoT-based school safety system integrating smart BLE-enabled ID cards, real-time student tracking, AI-powered weapon detection, and a centralized mobile app. Students wear smart ID cards that track location and feature an emergency help button for bullying or threats. AI surveillance at entry points detects weapons and triggers instant alerts to staff and parents. The mobile app connects teachers, parents, and administrators with live updates and safety notifications. Together, these tools create a secure, transparent, and emotionally supportive school environment.”

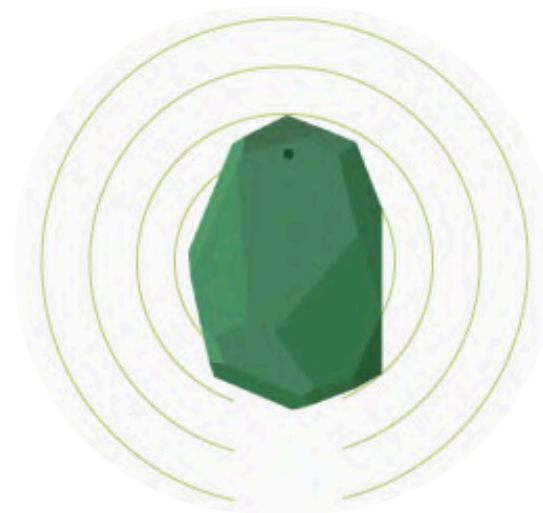


Smart ID Card (for students)

- Embedded with **Bluetooth Low Energy (BLE)** tracking chip
- Allows **real-time location tracking of the student** within school premises through the parent's mobile app



Smart Tag ID



Real Time Tracking

Weapon Detection Gateway Machine

Installed at the main school entrances

Equipped with:

- AI-powered camera
 - Metal & object detection system
- Detects concealed weapons (e.g., guns, knives)
- Triggers an audio/visual alert
- Sends instant alert to all staff devices & school screens
 - Shows location, time, and image from the detection zone
- Helps prevent active shooter situations or weapons entering the school



Smart Door Management System with Emergency Lockdown Capability

Integration with Central System:

- The door closing sensor machine is networked with the centralized school safety platform (likely managed via the mobile app/admin dashboard).

Continuous Monitoring:

- Each classroom door is equipped with a sensor that continuously monitors its open/closed and locked/unlocked status.



Alert Pop - Up

Teachers/Admins can:

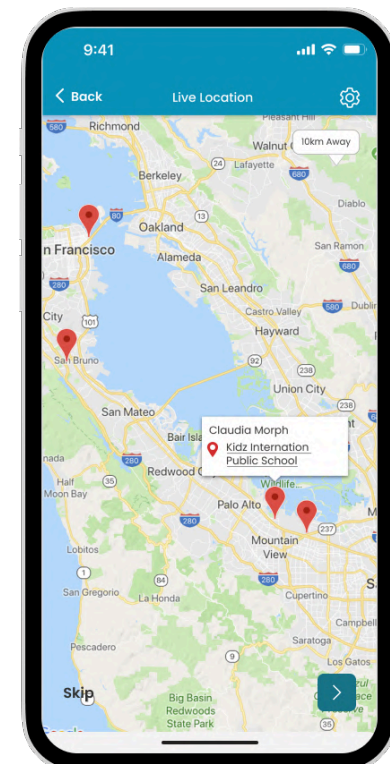
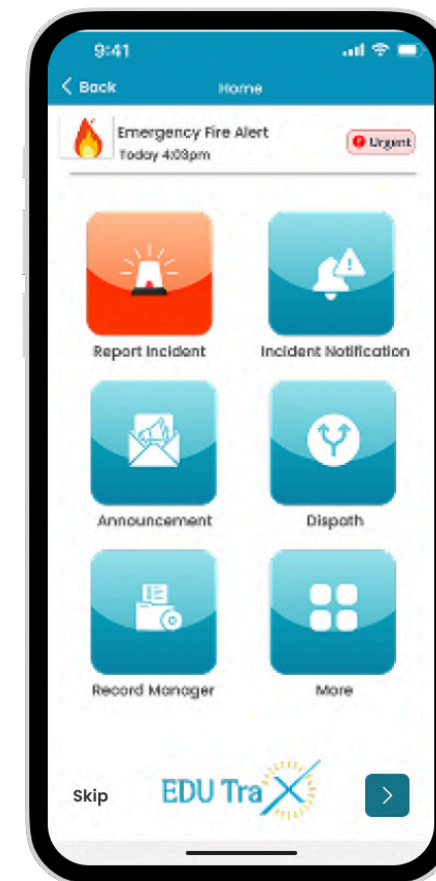
- Monitor emergency alerts
- View camera feeds (only when triggered by SOS)
- Track incidents or patterns related to student safety



Tracking APP (Parents)

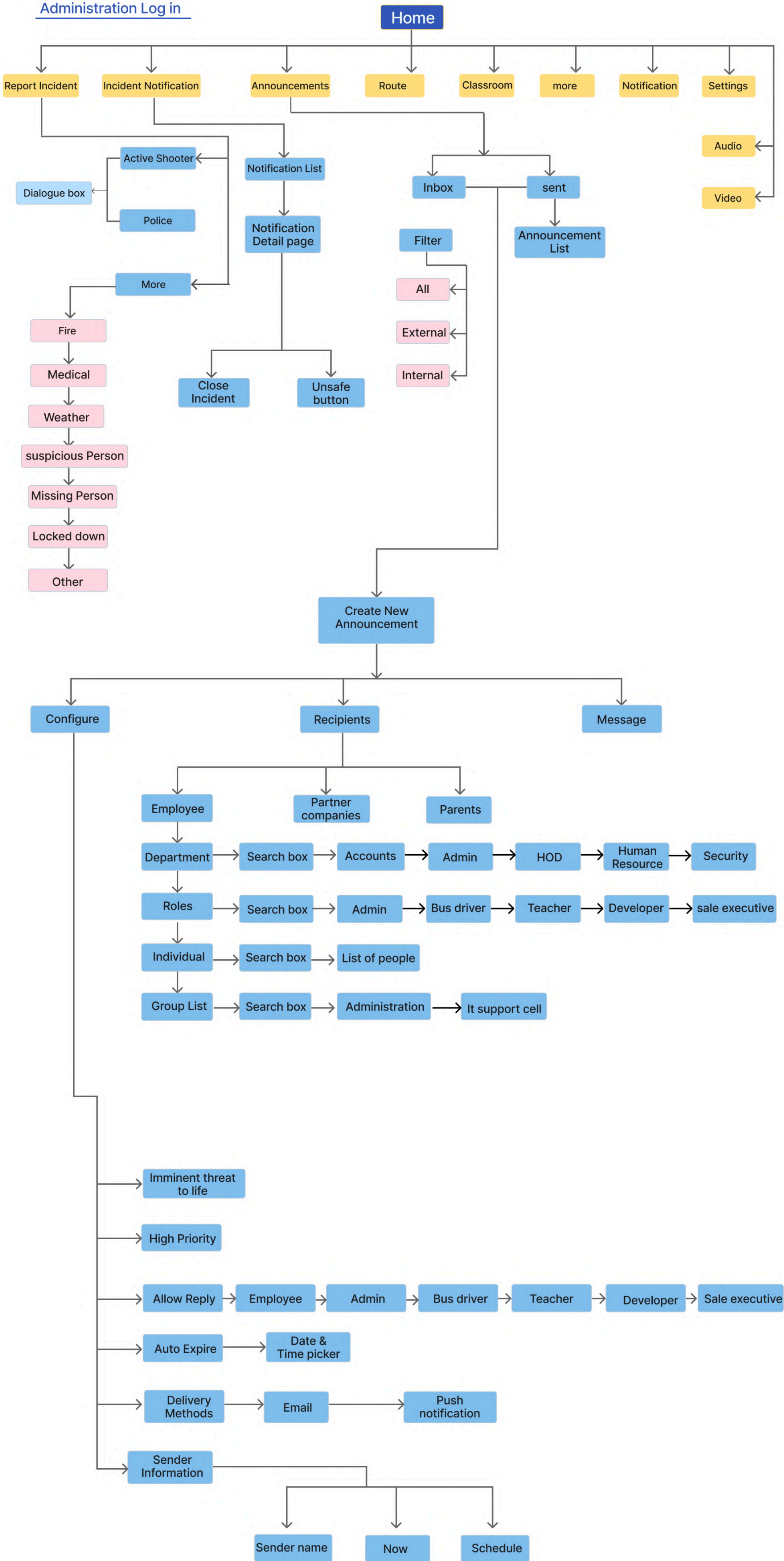
Parents can:

- View real-time location of their child in school
- Receive alerts in emergencies (e.g., lockdowns, bullying, weapon detection)



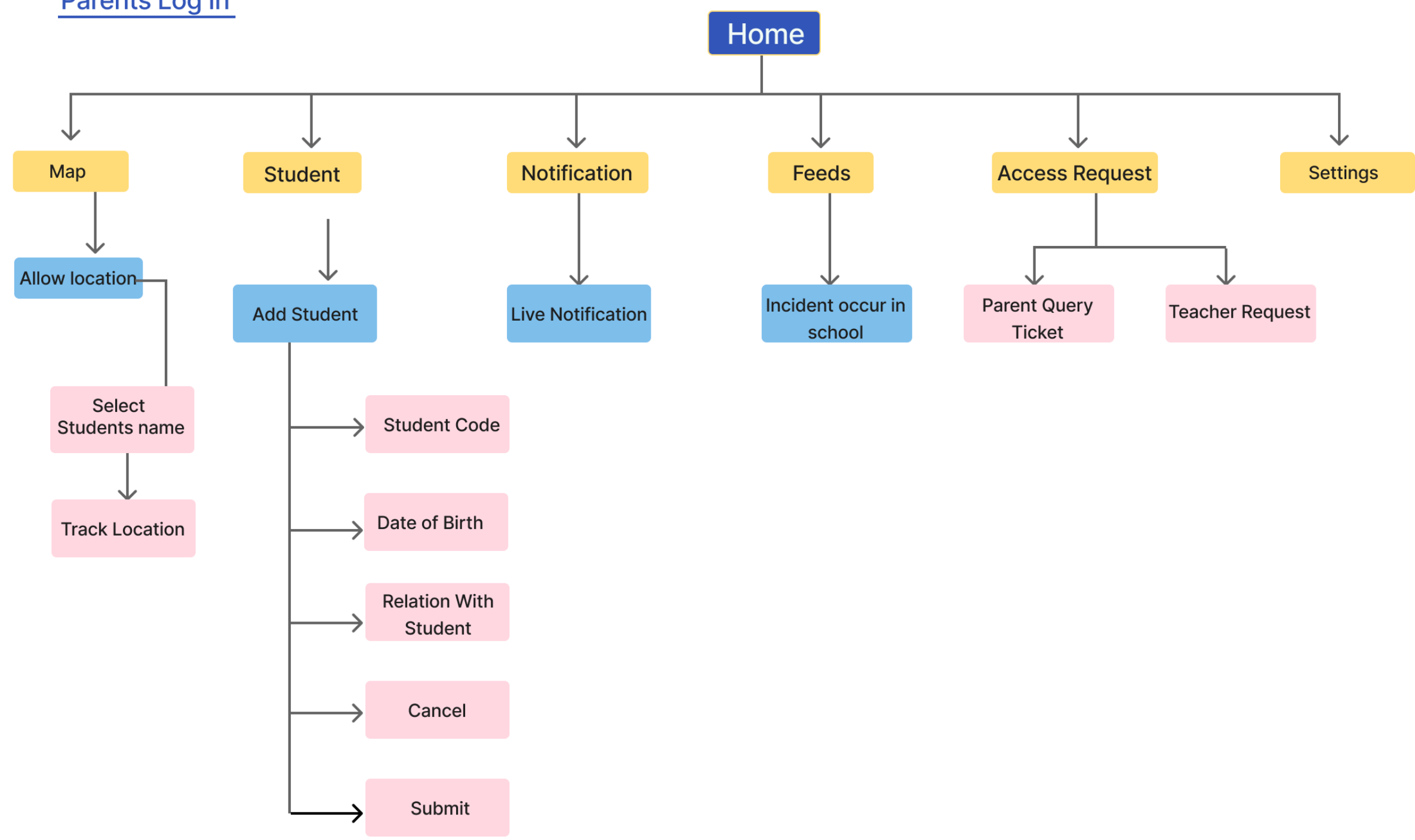
Information Architecture

Administration Log in



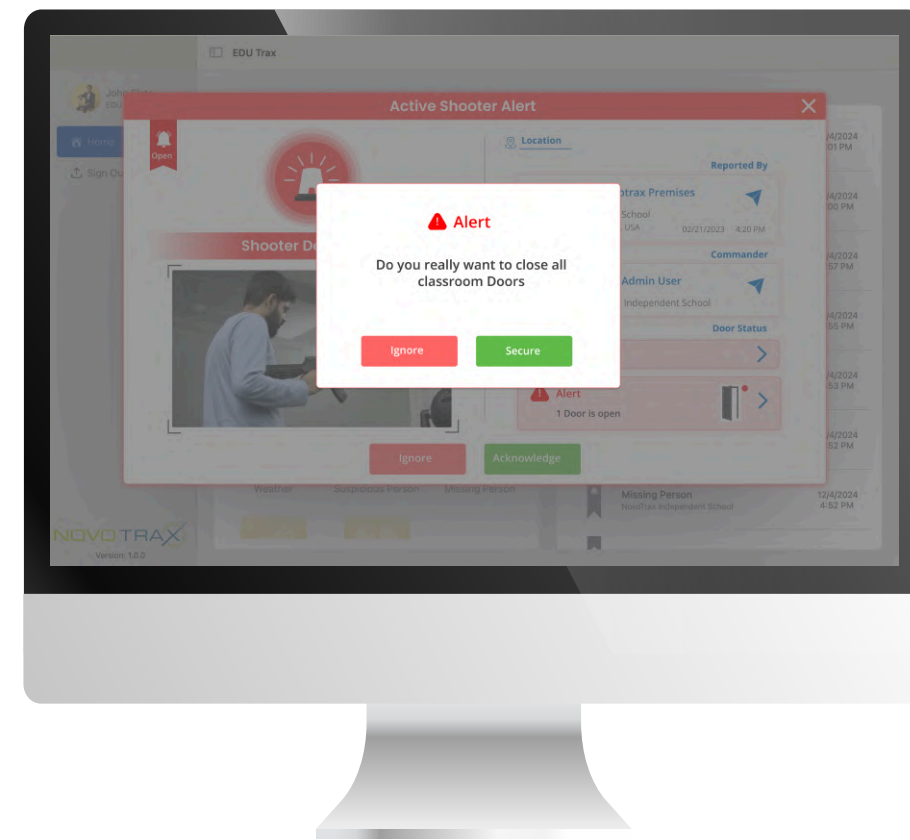
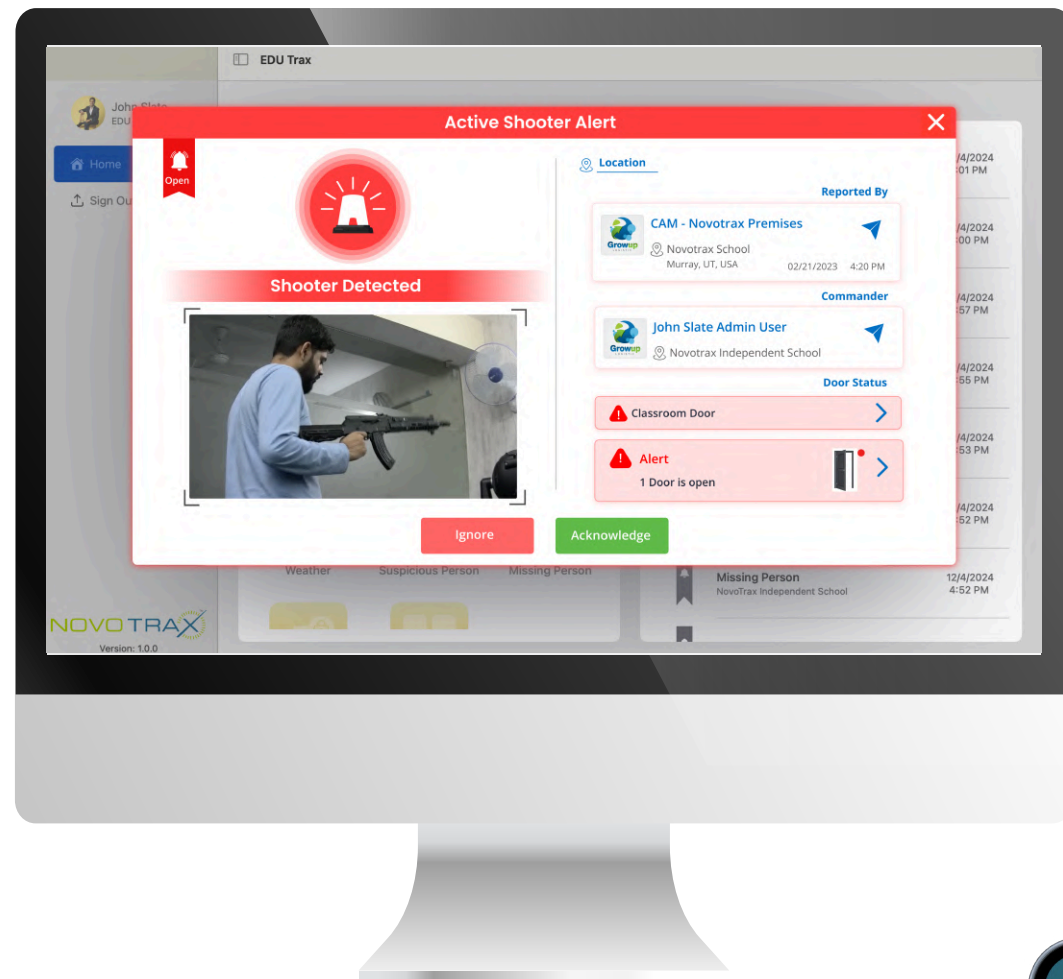
Information Architecture

Parents Log In

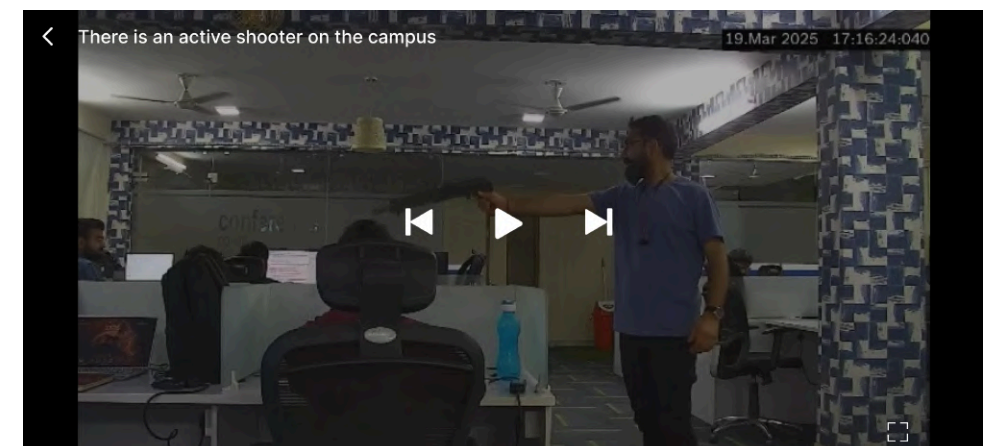
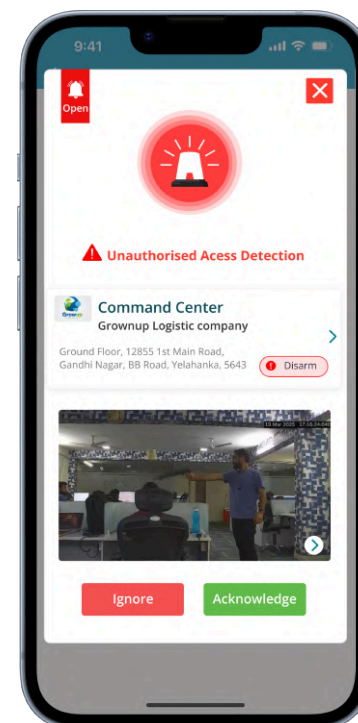


Design Intervention

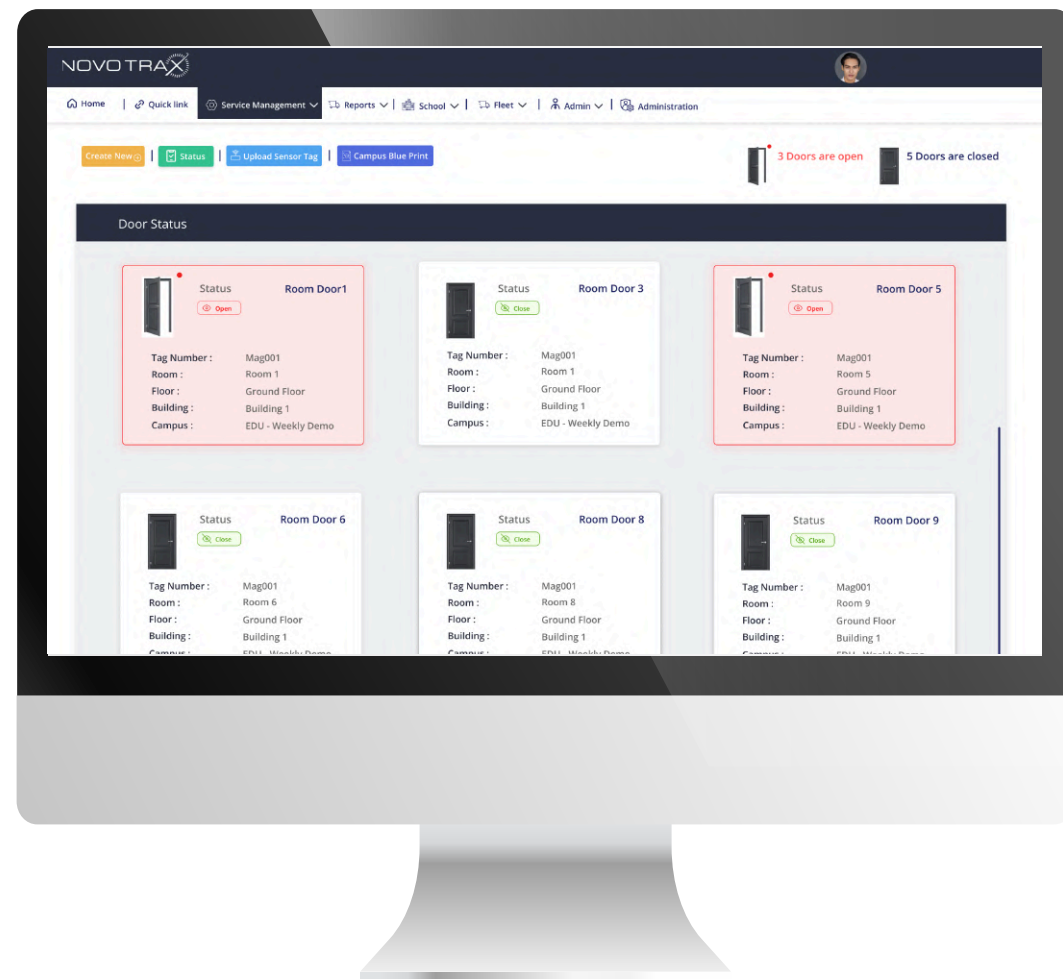
Admin Screen Alert Pop-up



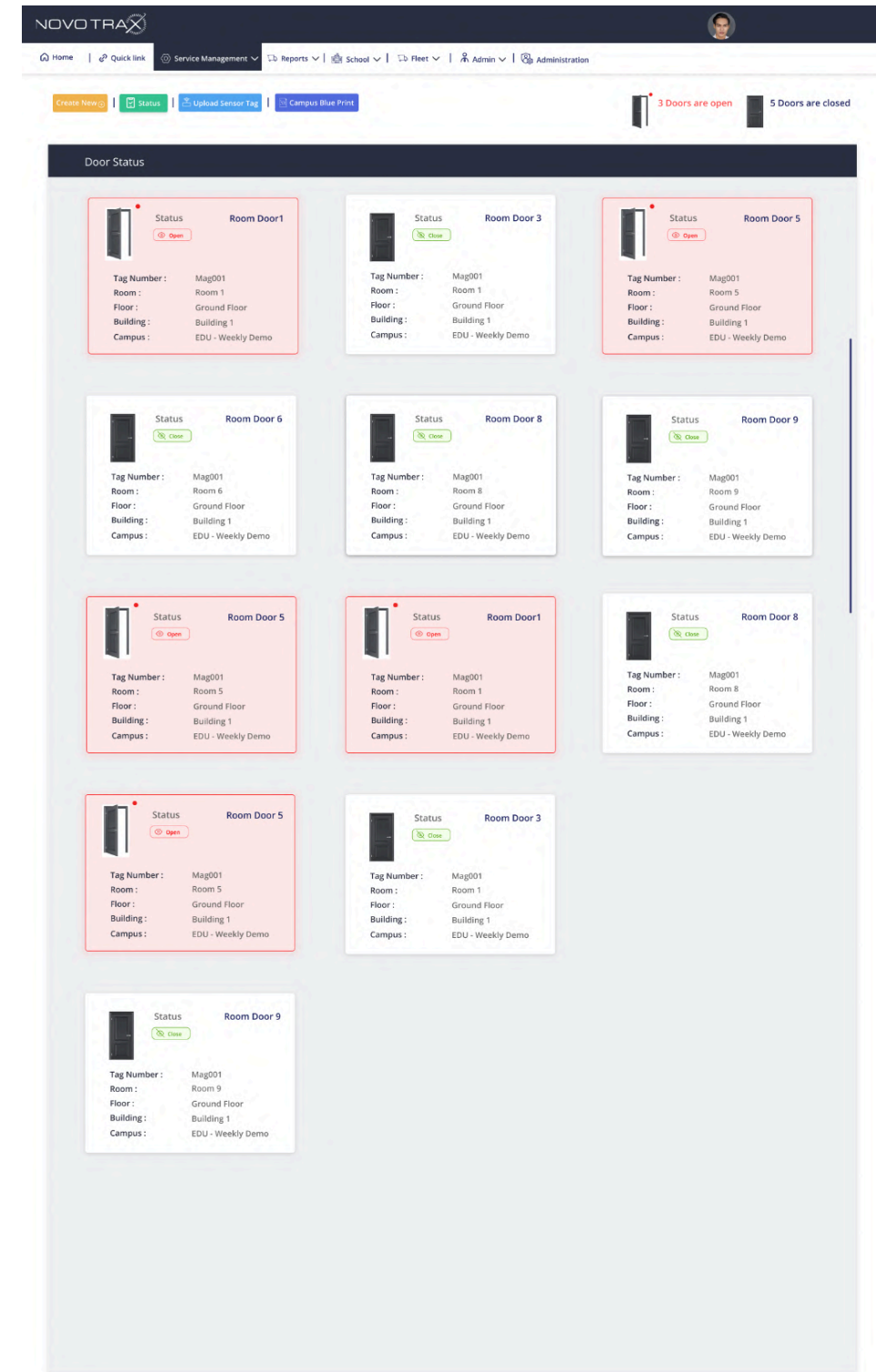
Alert Mode on mobile phone



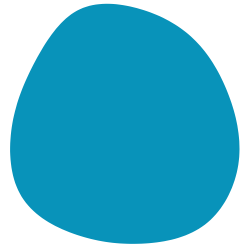
Design Intervention



Door Closing Status Screen

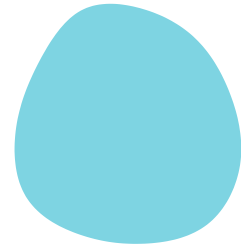


Color Theme



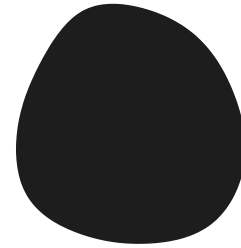
Primary color

#0993BA



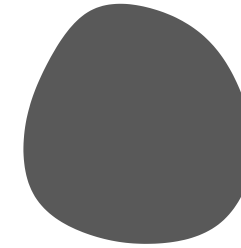
Secondary color

#7ED5E2



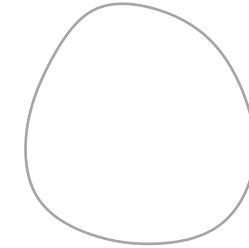
Text Color

#1E1E1E



Text Color

#595959



BG Color

#EEEEEF

Typography

Font

ROBOTO

Regular

Medium

Semi Bold

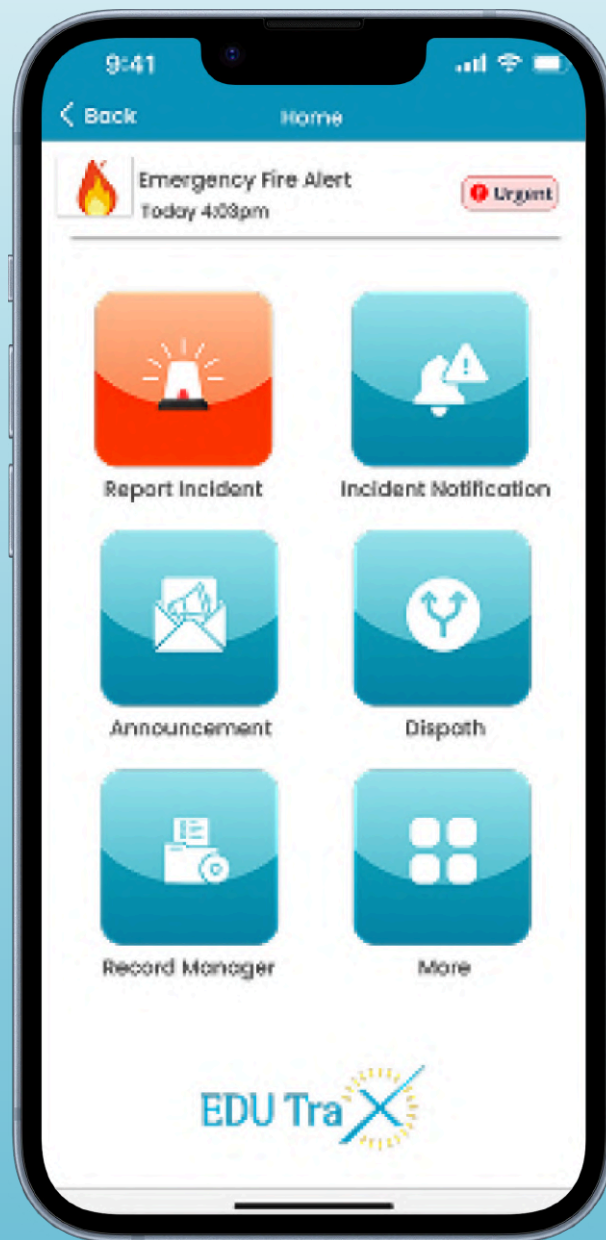
Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ,M,N,O,P,Q,R,S,T,U,V,W,Y,X

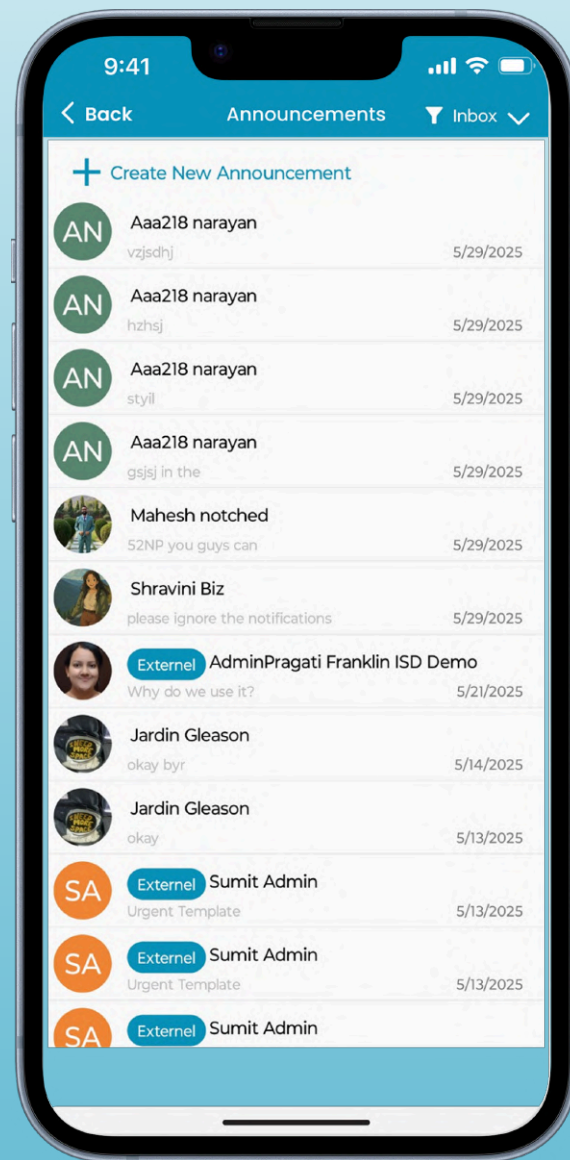
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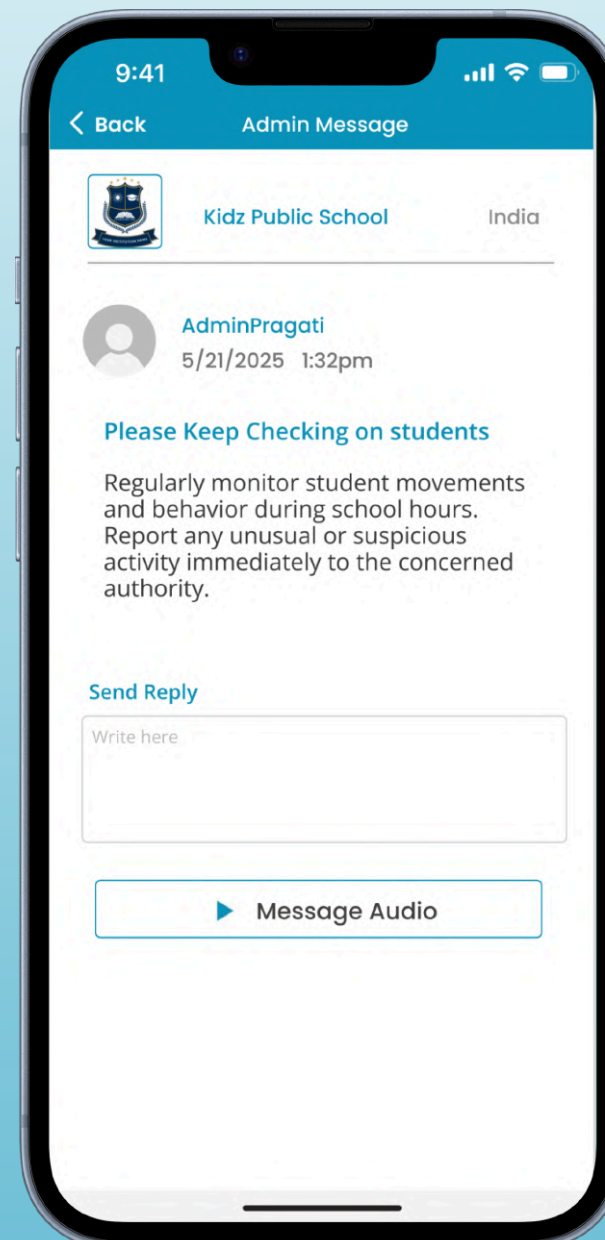
Announcement Flow



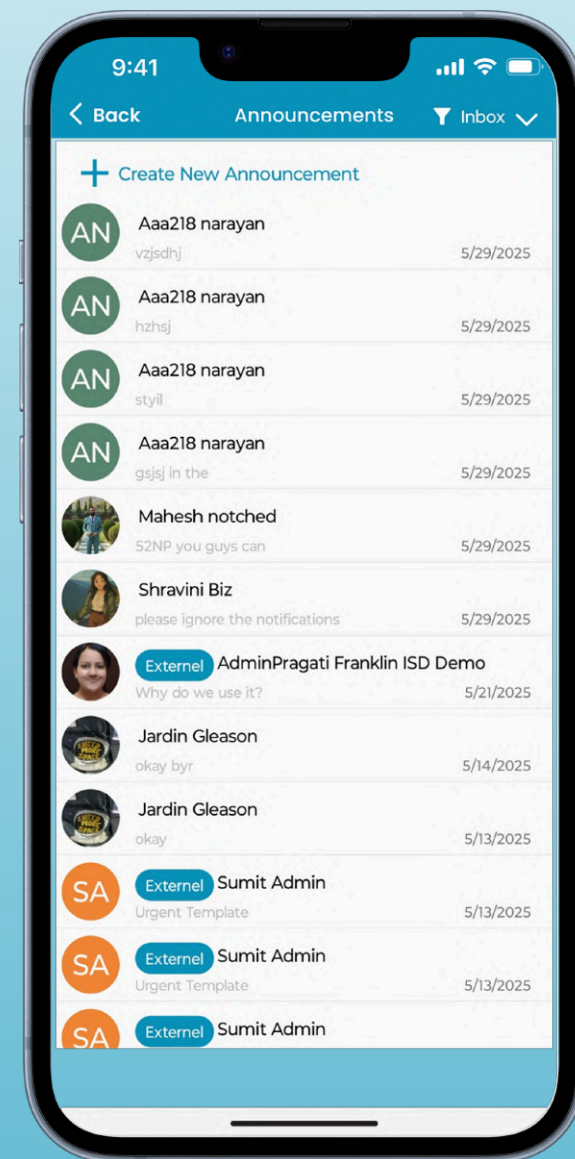
Home Screen



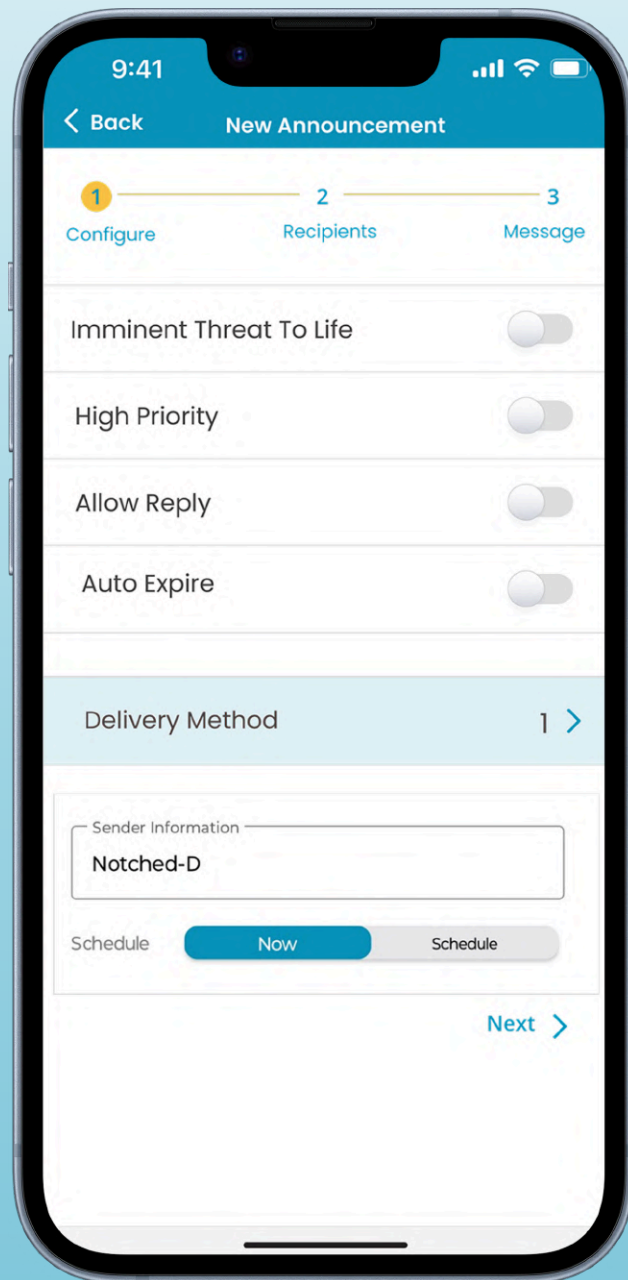
Create New Announcement



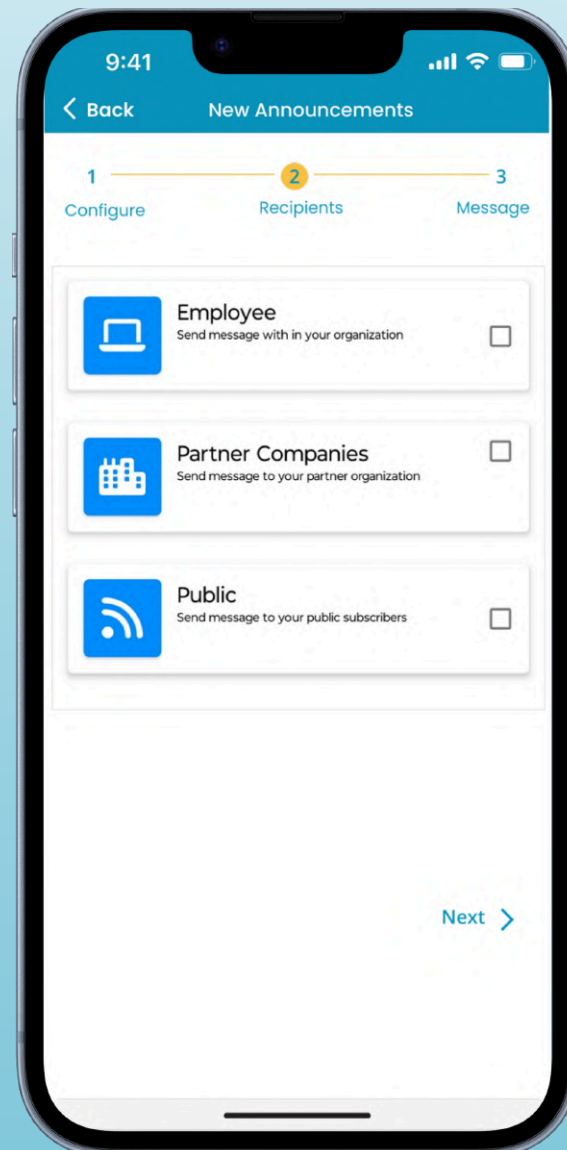
Admin Message



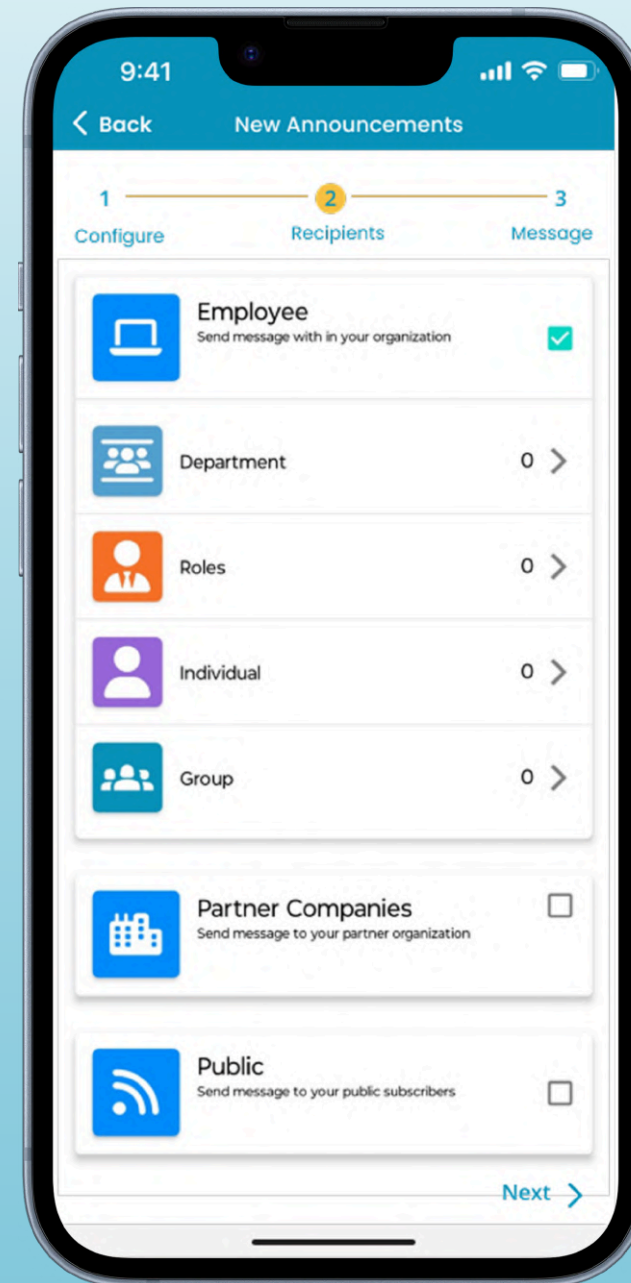
Announcement



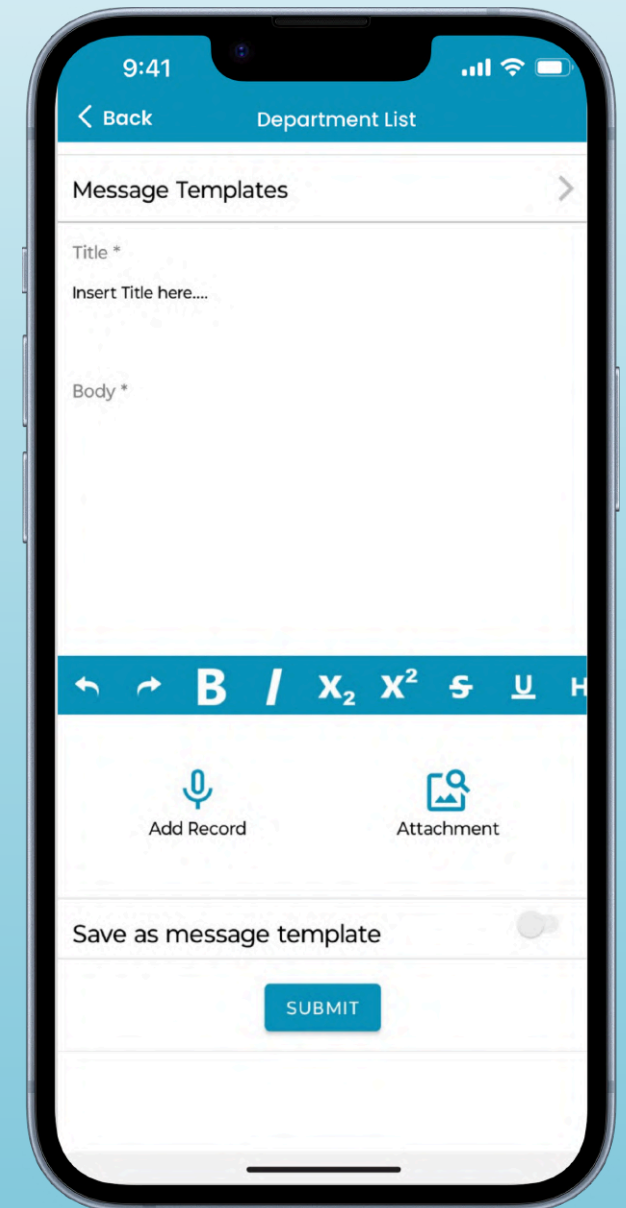
Configure Screen



Recipient screen

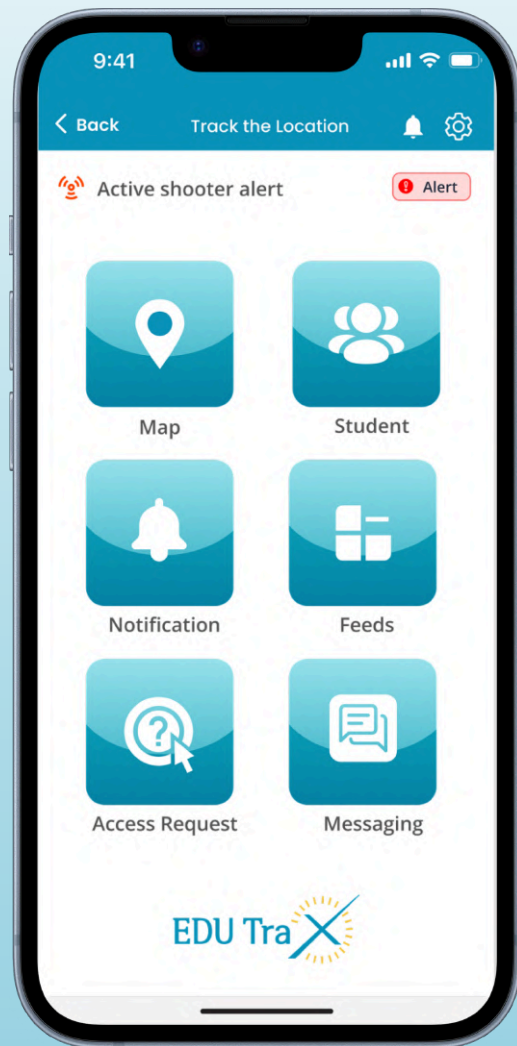


New Announcement Screen

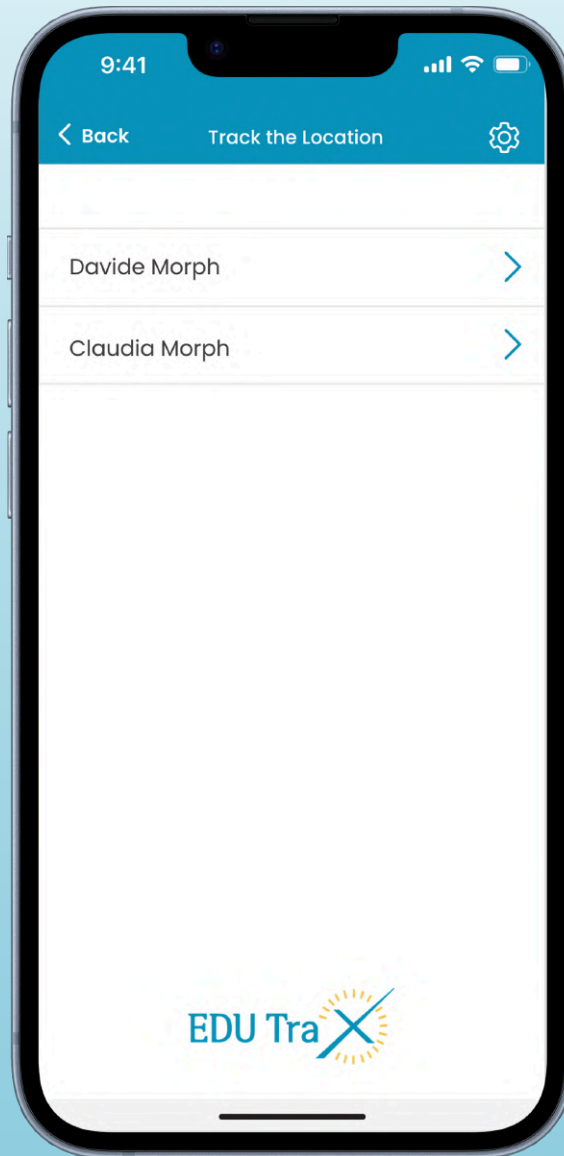


Department List

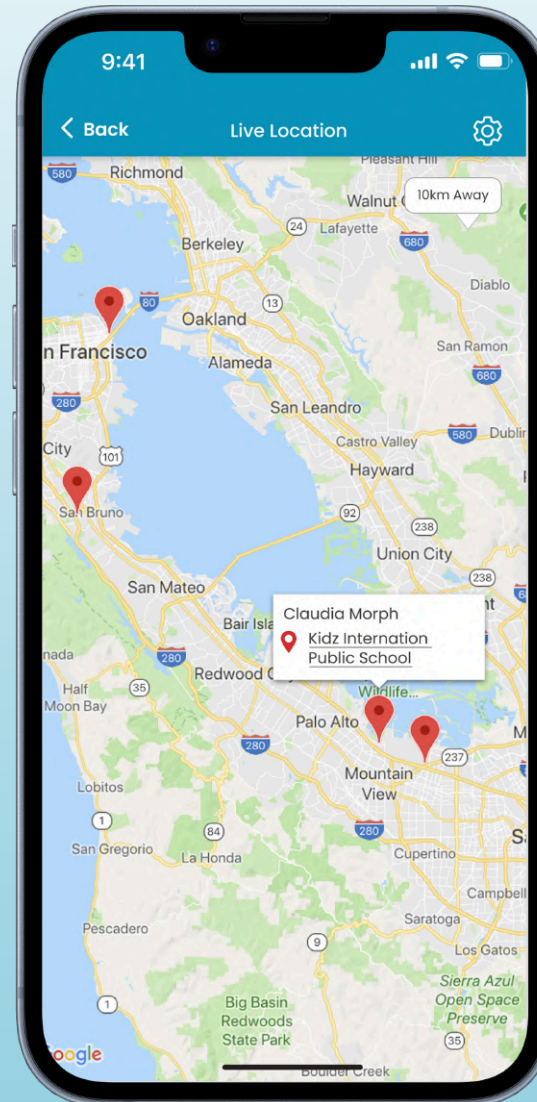
Parents Log In



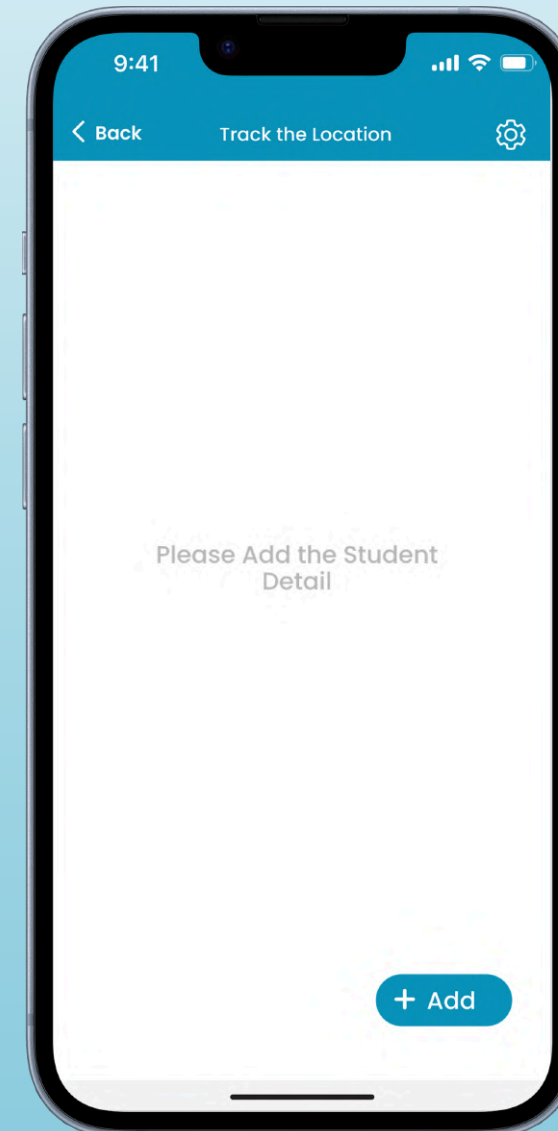
Home Page



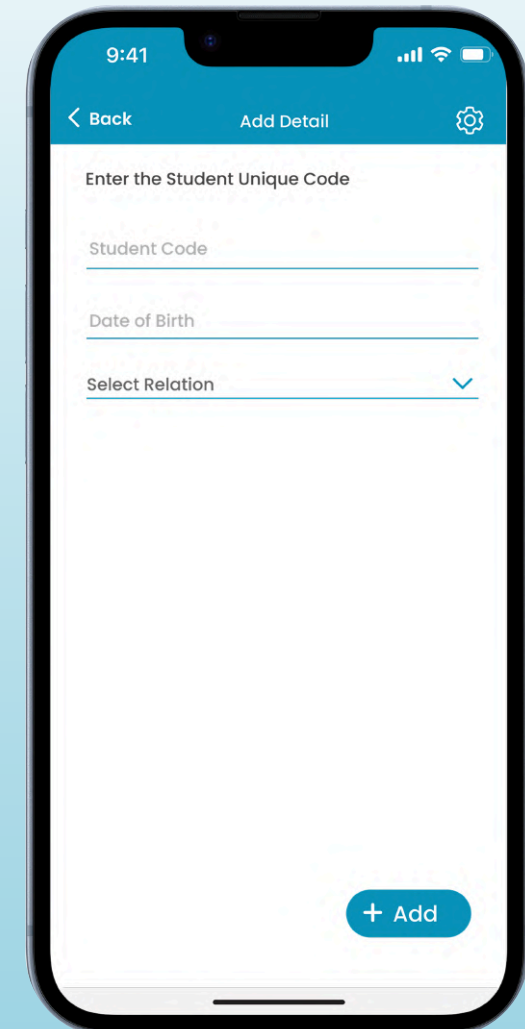
Select Name of Student



Track Location on map



Add student detail



Add Detail Page

Story Boarding



1. Parents Droping Their At Bus Stop



2. Bus Arrives,Child Boards The Bus



3. Parent Track Their Kids On EDU TRAX



4. Smart ID Card On Child



5. Classroom



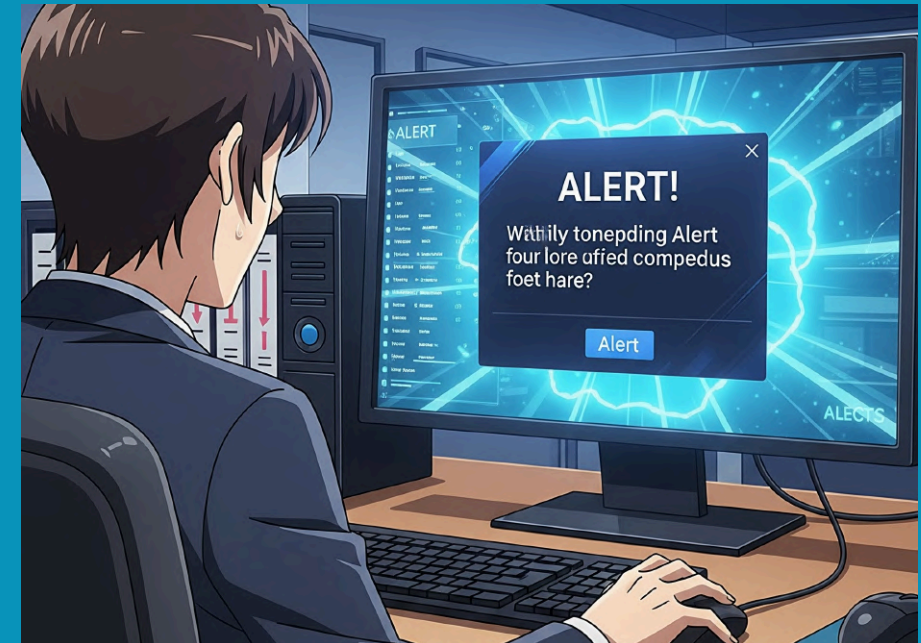
6. Intruder Enters In School Premises



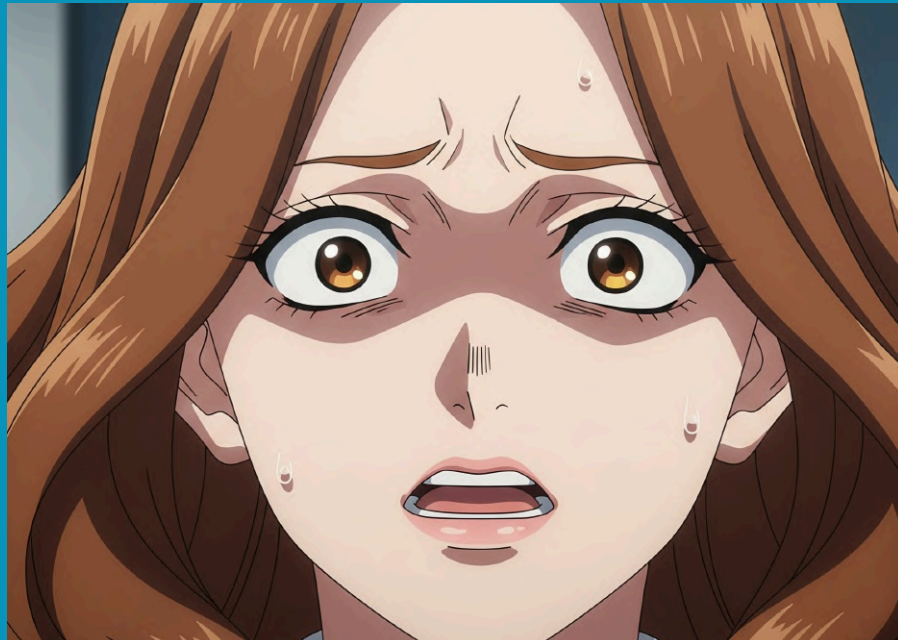
7. Security Camera Scans Weapon



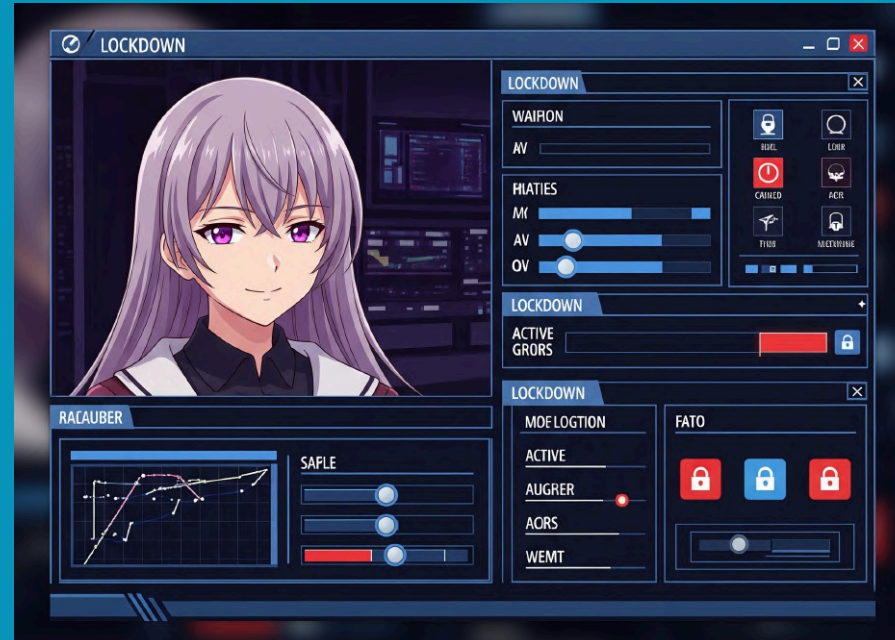
8. Siren Machine Beeps



9. Alert Popup On Admin Screen



10. People Got Tensed



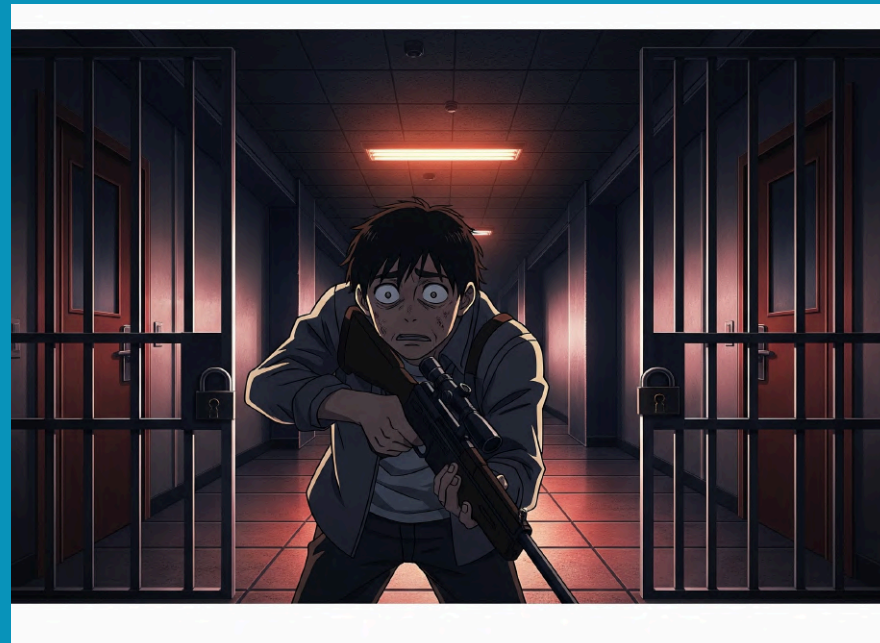
11. Alert Pop Up Emerge To The Screen



12. Admin Locks Doors After Pop Up Arise



13. All Classrooms Door Now Lock



14. Shooter Trapped in School Premises



15. Trying to Open the door but failed



16. Caught By Police



This project provided several key learning insights regarding the development and implementation of an IoT-based school safety system:

- **Understanding Psychological Impact:** A primary learning was recognizing the significant mental health impact that perceived threats, like terror attacks, have on students. Addressing this goes beyond physical security to encompass emotional well-being and a sense of safety, directly influencing their ability to learn and thrive.
- **Importance of Stakeholder Connectivity:** A key takeaway was the essential role of a centralized platform that connects all stakeholders—students, parents, teachers, and administrators. Seamless communication and coordinated action are paramount during emergencies.
- **Balancing Control with Empowerment:** We gained insight into designing a system that provides administrators with powerful system control (e.g., one-click lockdown) while simultaneously empowering students with discreet emergency features and parents with vital transparency and reassurance.
- **Leveraging Real-time Data:** The project underscored the power of real-time data for effective crisis management. Instant location tracking, immediate weapon detection, and live alerts are crucial for rapid response and containment, significantly minimizing potential harm.
- **Multi-Layered Security Necessity:** We learned the critical importance of a multi-faceted security approach. Relying on a single solution is insufficient; instead, integrating technologies like BLE tracking, AI-powered detection, and a cohesive mobile platform creates a more robust and comprehensive defense.

The implementation of this IoT-based school safety system is expected to yield several significant outcomes:

- **Alleviated Student Anxiety:** By creating a perceptibly safer school environment with robust protective measures, the system will reduce student fear and anxiety related to school violence, directly addressing Jerry's concerns and fostering a more conducive atmosphere for learning and well-being.
- **Enhanced Proactive Security:** The integration of AI-powered weapon detection and rapid lockdown capabilities will establish a proactive security posture. This will significantly improve the school's ability to prevent or quickly mitigate active threat situations, securing classrooms and containing dangers.
- **Improved Emergency Response Efficiency:** The real-time tracking and instant alert system will lead to faster and more informed emergency responses. Staff can pinpoint locations, view critical data, and implement lockdowns with unprecedented speed and precision.
- **Increased Parental Confidence:** Parents will experience enhanced peace of mind and reassurance through access to real-time student location tracking and immediate emergency notifications via their mobile app, strengthening the home-school safety partnership.
- **Centralized Incident Management:** The unified platform will enable more efficient monitoring and management of safety incidents. This includes tracking patterns, analyzing threats, and continuously improving safety protocols based on comprehensive data.