

ENODO
GLOBAL

**SCHOOL VIOLENCE
MITIGATION PROGRAM (SVMP)**
"Schools lack reliable mechanisms to identify, monitor, and address student grievances to prevent threats from manifesting into violence – ENODO fills the gap."
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School Violence Mitigation Program (SVMP)

SUBMITTED BY

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“ENODO bridges the gap between data analytics and human understanding to uncover how and why Student Culture triggers school violence.”

1 Background

In the 2017-18 school year, U.S. schools experienced 3,375 threats and [297 violent incidents](#) -- 113% more than the previous year. From the February 2018 shooting in Parkland, Florida to the fall of 2018 alone, there were over [2,203 threats and violent incidents](#) – over 70 per day – impacting 2,947 U.S. schools within a six-month period. This sharp escalation in school violence (e.g., bullying, self-harm, gang activity, suicides, and shootings) is unlikely to abate without innovative solutions that go beyond current efforts.

Recent initiatives proposed by school administrators, law enforcement officials, education professionals, child psychologists, and security consultants offer reactive, narrow approaches to the problem. These include social media monitoring, gun control measures, mental health initiatives, active shooter training, facial recognition, bulletproof backpacks, arming teachers, and even insurance policies. These initiatives fail to understand and address the problem of school violence from a student perspective.

ENODO Global’s *School Violence Mitigation Program* (SVMP) delivers an alternative that enhances existing approaches. It delivers a proactive solution that enable stakeholders to uncover underlying causes of violence, predict violent incidents, prepare for potential threats, and reduce the occurrence of threats and violence. Moreover, SVMP provides data-driven insights into a school’s student body and culture to help stakeholders prevent school violence and foster healthier, safer school cultures for positive student outcomes.

2 The ENODO Approach

ENODO Global’s approach seeks to prevent violent incidents and foster safer school cultures by understanding the needs, interests, and concerns of students. At ENODO, we view school violence as a student-based problem that requires a student-based solution. Our approach combines data analytics, social media monitoring, and population-centric analysis to create tailored solutions that enable educators to pinpoint the root causes of school violence, address important student issues, and forecast and prevent violent incidents and threats alike.

We offer a suite of analytical products and levels of support based on schools’ requirements, ranging from our social media monitoring and analysis service (Social Media Monitoring 2.0) to our comprehensive school violence prevention strategy (School Violence Mitigation Program (SVMP)). Services and deliverables are tailored depending on the scale and scope of the project. Clients have the option to pursue our SVMP or to request any of its associated reports and

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services: Social Media Analysis, Social Risk Analysis, Social Risk Action Plan, and Social Media Monitoring/Active Analysis. We have previously tailored analyses to address specific events, individuals, and topics.

Note: ENODO produced Capability Demonstrations on [Washington D.C.](#), [Prince George's County](#), and [Martin County](#) public schools to illustrate our analytical rigor and insights clients can expect to receive.

3 School Violence Mitigation Program (SVMP)

The School Violence Mitigation Program (SVMP) is a two-phased project that goes beyond typical social media monitoring to deliver specific, data-driven recommendations. Our analysis delivers key insights about a student body that enable schools to: (1) uncover and address the root causes of school violence, (2) design and implement violence prevention strategies specific to the needs, interests and concerns of students, and (3) improve school culture and climate to reduce the incidence of threats and violent incidents.



Figure 1. SVMP Phases

ENODO builds technical platforms customized to each school's specific social, information, and language environments. Each platform collects open-source, publicly available information to provide data-driven insights that comply with legal and technical requirements and ensure student confidentiality. Our analysts use social media and other information sources to uncover, track, and measure the impact of various "[Social Risk](#)" factors (e.g., body shaming, gangs, video games, and sexting) that increase risk for specific schools. Moreover, analysts examine students' online behaviors to uncover narratives that explicitly or implicitly enable violence.

Analysts apply Topic Modeling, Sentiment Analysis, and Machine Learning to identify and measure student sentiment associated with key issues, trending topics, and important

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activities. Findings empower stakeholders to efficiently allocate resources and create engagement activities that simultaneously build support with students, parents, teachers, administrators, and security personnel, and address the most pressing Social Risk factors. Activities and messages are designed to resonate with students and influence online discourse in a way that counters or discourages violent narratives and behaviors. The outcome is increased school security, improved social-emotional learning, and a re-emphasis on academic achievement.

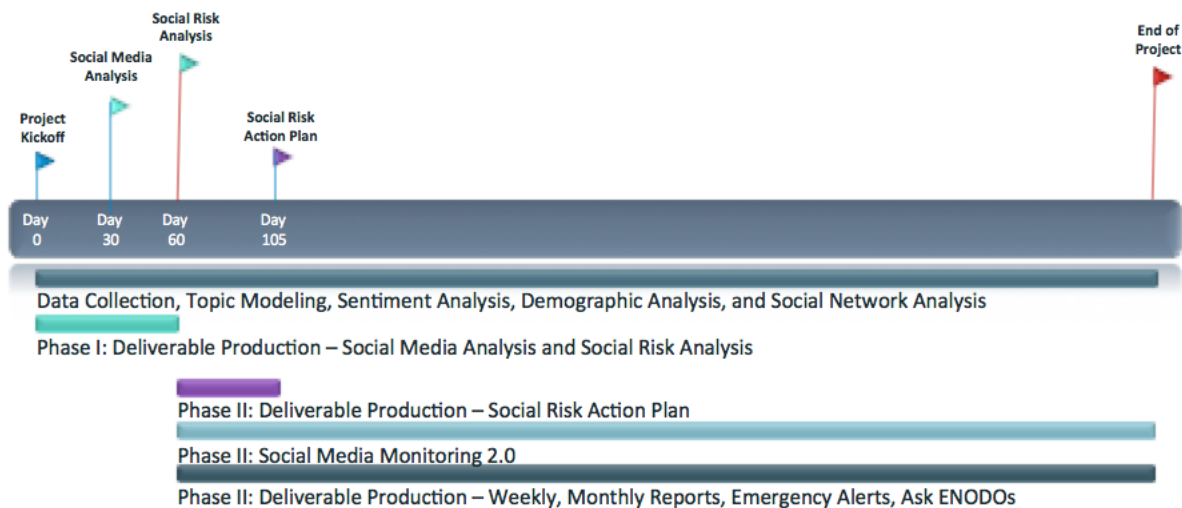


Figure 2. SVMP Timeline

3.1 Phase 1: Diagnose the Problem (60 days)

In Phase I, ENODO analysts design and employ a customized data analytics platform, tailored to the specific information, language, geographic and social environments and programmed to gather data from all relevant social and traditional media feeds, to conduct an in-depth examination of the student body’s online environment. Analysts then begin creating a Social Media Analysis, delivered on Day 30, which provides an overview of a school/ district’s online environment (i.e. students’ online behaviors, communication patterns, and effectiveness of school administrators’ engagement activities). On Day 45, Analysts begin collecting additional data to create a Social Risk Analysis, delivered on Day 75, which delivers insights about students’ underlying grievances, interests, and concerns (i.e. Social Risk factors).

Together, these analyses deliver quantitative analysis of dominant Social Risk factors and qualitative analysis to provide context for administrators to better understand the complexities of their unique school violence problem, which enables administrators’ to optimize existing violence prevention efforts and decision-making processes. Moreover, these analyses provide a

baseline assessment of school climate and culture, which is then used to inform the Phase II activities.

3.1.1 Social Media Analysis (30 days)

Analysts collect, filter, and synthesize social media data over a thirty (30) day period to create a detailed analysis that:

- Maps the information environment for a specific geographic area, school district, campus, university or school
- Defines student social media use by online platform to identify where the majority of students' online discussions take place
- Identifies key individuals or groups influencing online discussions (i.e. social media influencers)
- Pinpoints key and trending topics discussed most by students
- Measures school administrators' social media reach in terms of saturation and penetration (i.e. ability to engage students through online communications)

3.1.2 Social Risk Analysis (30 days)

Analysts collect, filter, and synthesize social media data over a thirty (30) day period to create a detailed analysis that:

- Measures student sentiment about key and trending topics, issues, individuals, and events
- Identifies student perceptions of existing school violence incidents and prevention initiatives to determine effectiveness
- Monitors student sentiment over time to identify anomalies, deviations, and changes based upon activities and events
- Identifies differences within the student body (based on factors such as race, religion, ethnicity, gender, and age)
- Delivers recommendations to enhance existing violence prevention initiatives

3.2 Phase II: Solution Implementation

Using the baseline assessments from Phase I, ENODO designs a Social Risk Action Plan (SRAP), a dynamic, comprehensive school violence prevention strategy that allows administrators to better direct resources to address the root causes of school/ district-specific school violence problems. ENODO supports administrators in implementing communication and engagement activities designed to resonate with students and other stakeholders to shape school culture and mitigate violence. ENODO also conducts real-time Social Media Monitoring to measure the effectiveness of the Social Risk Action Plan, provide recommendations to modify engagement

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activities in response to changes in student culture, deliver indications and warnings of potential threats as a last line of defense, and identify new and emerging Social Risk Factors that have the potential to trigger future violent behavior.

3.2.1 Social Risk Action Plan (45 days)

The ENODO team uses the baseline assessments conducted in Phase I to design and implement a comprehensive school violence prevention strategy that:

- Uses data-backed findings to direct resources, focus efforts, and inform targeted engagement activities that address Social Risk Factors
- Creates a comprehensive communications plan that uses messaging designed to resonate with students to improve school climate and counter violent narratives
- Improves administrators' ability to connect with students by increasing social media penetration and leveraging social reach of key influencers
- Positively shapes student culture, sentiment, and behavior to reduce incidents of violence

3.2.2 Social Media Monitoring 2.0

ENODO's Social Media Monitoring capability goes beyond typical offerings to provide active analysis, which offers an additional layer of analytical rigor. Our monitoring service delivers not only alerts of imminent threats, but also regular reports that deliver unique insights, findings, and recommendations, similar to those clients receive as a part of our SVMP. ENODO analysts actively monitor students' social media use and online discourse to:

- Deliver real-time indications and warnings of impending school violence events (Emergency Alerts) and provides data-backed answers to specific questions submitted by school administrators (Ask ENODOs)
- Provide regular updates (e.g. daily, weekly, monthly, or quarterly) that track student behavior and sentiment associated with critical Social Risk Factors
- Identify trends and report deviations from the baseline assessments
- Measure progress of the Social Risk Action Plan and ongoing engagement activities
- Provide recommendations to modify or enhance administrators' communication and engagement activities

4 Conclusion

ENODO's School Violence Mitigation Program delivers a Social Risk based approach to forecast and mitigate violence in schools across the country. Our data-driven, population-centric methodology produces timely, quantifiable, solutions that optimize existing initiatives and

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enabling stakeholders (e.g., students, school administrators, teachers, and parents) to understand and address the issue of school violence through the eyes of students themselves. ENODO's approach provides powerful insights by leveraging the voices of those most affected by school violence and giving stakeholders the tools to discover the root causes, address important student issues, and build safer, healthier school cultures.

5 Appendix: Process and Methods

ENODO leverages decades of experience in Military Planning, Operations, Strategic Communications, and Information Operations (IO) to conduct advanced “Social Listening”, design innovative violence prevention strategies and execute them in sensitive environments. Our approach combines data analytics and social science techniques, moving beyond social media monitoring to provide social media analysis that provides key insights about school culture and student needs, in addition to traditional alerts of potential threats.

The result is better data, better analysis, and better results through a novel Social Listening approach, focusing on uncovering “why” students have certain perceptions as opposed to “what” they think”, and using quantitative data to measure the effectiveness of our program while always providing context through qualitative analysis.

5.1 Social Listening

Our approach uses Social Listening, or social media analysis, to uncover the voices and perspectives of students themselves on violence-related issues, enabling us to design mitigation strategies unique to their needs and interests. Social Listening informs all of our products and offerings, from our baseline social media monitoring service to our comprehensive School Violence Mitigation Program (SVMP). Our Social Listening capability is built around two key components, our methodology and data analytics.

5.1.1 Population-Centric Methodology

ENODO’s advantage over traditional consultants or data analytics firms lies in our population-centric methodology. Our methodology bridges the gap between data, technology and human understanding, and serves as the lens through which school violence-related data is analyzed and synthesized into actionable insights. The methodology examines complex social dynamics through a single variable: identity, the key to understanding people’s beliefs, values, interests, and behaviors. By harnessing the power of identity and incorporating it into school violence prevention efforts, ENODO helps stakeholders guide student narratives, shape student sentiment and school culture, positively influence behavior, and proactively prevent violence.

5.1.2 Data Analytics

The backbone of the SVMP is our customized data analytics platform that transforms hard data into meaningful, actionable information. Each platform is customized for a school’s specific information, linguistics and social environments. We leverage best-in-class tools like Natural Language Processing and Machine Learning to quantitatively measure text-based narratives, perceptions, and sentiments. By combining advanced technologies with our population-centric

methodology, we make sense of digital information from online news outlets, social media, and proprietary datasets to deliver clear recommendations that guide violence prevention efforts and accurately measure results over time.

5.1.3 Process

ENODO’s analysis provides a repeatable, measurable process to understand what matters most to students, how they feel about those topics, who influences those perceptions and subsequent behaviors, how those perceptions and behaviors change over time, and how they can be changed for the better by school administrators and educators. The graphic below provides an illustration of how the various techniques, when properly sequenced, are used to develop findings and recommendations to support violence prevention efforts:

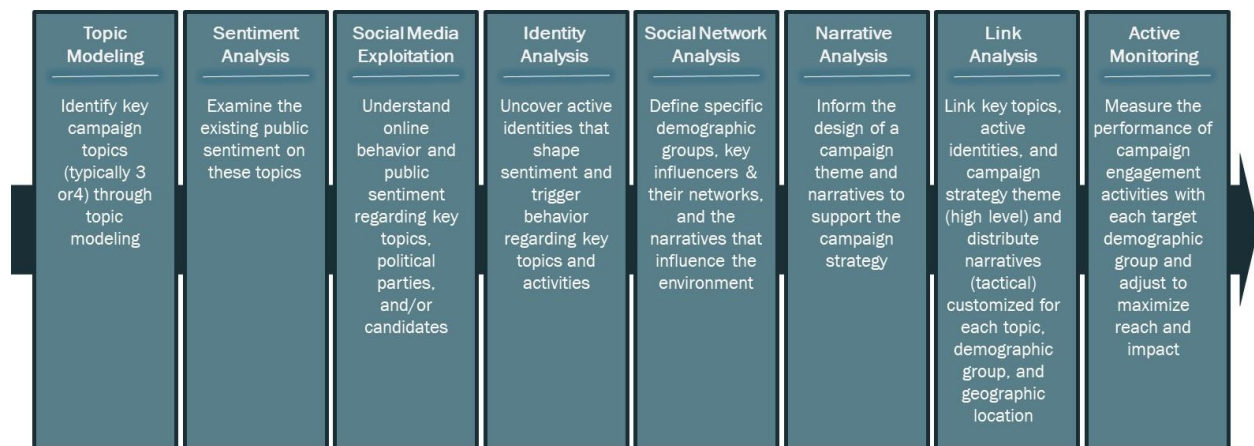


Figure 1. Data Analytics Process

- **Topic Modeling:** Identify and classify the most relevant and discussed issues related to school violence (e.g., key and trending topics)
- **Sentiment Analysis:** Measure the positive versus negative (and neutral) sentiment of online discourse associated with key and trending topics, individuals, events, and violence prevention initiatives
- **Demographic Analysis:** Dissect students into demographic groups to understand how different groups are affected by and think about school violence related issues
- **Social Media Investigation:** Collect data from online and social media platforms (e.g., Facebook, Instagram, Snapchat, Twitter)
- **Identity Analysis:** Uncover active identities that underpin students’ sentiment and shape and trigger behaviors
- **Social Network Analysis:** Map out the most important communications conduits (key individuals or “influencers”) and the patterns that drive popular narratives

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- *Narrative Analysis*: Design a Master Narrative and sub-narratives to connect with students using language that resonates with them
- *Link Analysis*: Link key topics and student language with violence prevention efforts
- *Sentiment Over Time*: Track changes in students' perceptions of individuals, issues, and events over an extended time period
- *Social Reach*: Measure how many students school administrators' online posts reach beyond their immediate followers
- *Online Use by Platform*: Breaks down students' social media use by platform to identify the best platforms to reach them