



# The SIFT Algorithm

To get useful insights from the voting data, we created an algorithm that can help analyze voting patterns, trends, and the relationship between student behaviors and school scores. These insights can help predict behavior trends, student well-being, and overall school health.

We can generate charts that can be useful to decision makers, school districts, schools, and students.

## Data Used

### 1. Student Votes:

- Positive Leaders (students voted as positive influences)
- Negative Influences (students voted as having negative impact or bullying behaviors)
- Students Needing Help (students identified as possibly without friends)

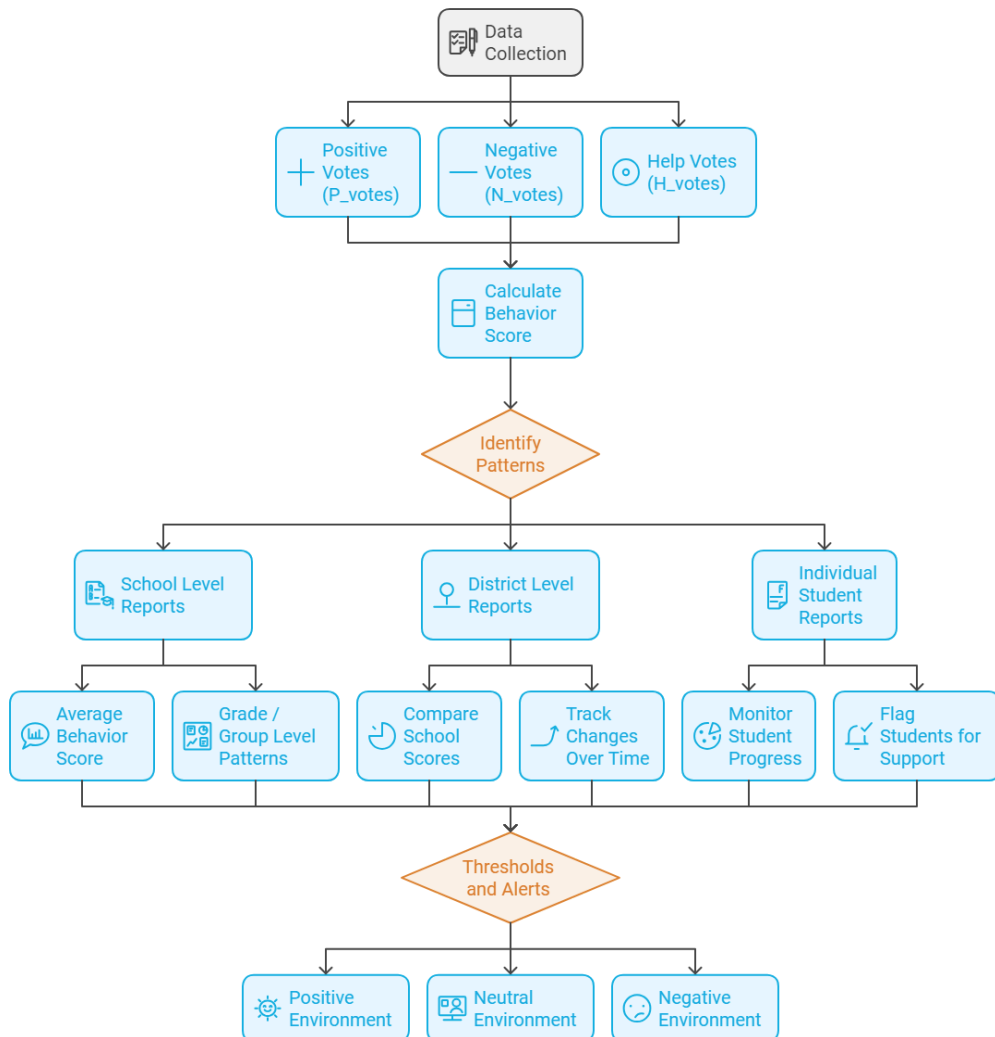
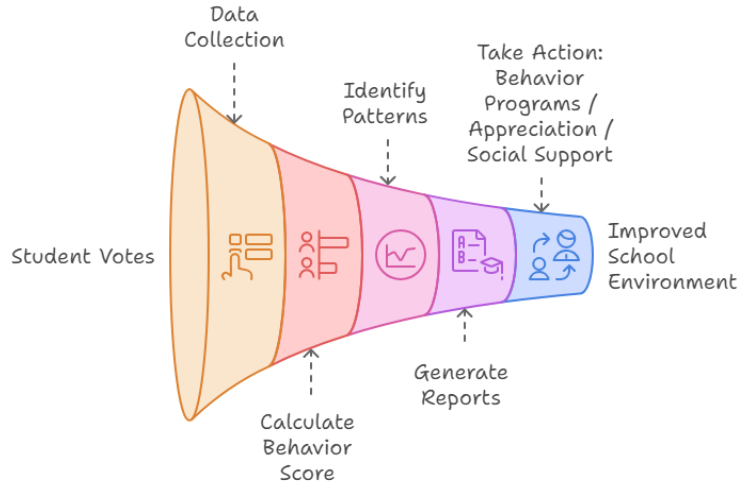
### 2. Student Database

*(Note: This is currently not integrated this in the app, but can be added for a more detailed analysis):*

- Student information (grade level, age, email)
- School information (school name, district, level—elementary, middle, high school)
- Past performance data (academic scores, attendance, good/bad citizenship records)
- SIFT voting history of individual voters and nominees

# Steps to Generate Insights

Behavioral Data Analysis Funnel



## Step 1. Data Collection

Students can be voted in either of these categories:

**Positive Leaders:** Students who display positive, leadership, and helpful behaviors.

**Negative Influences:** Students who display bullying or negative behavior towards others.

**Help Needed:** Students who come across as introverted, sad, timid, isolated, or in need of either social or emotional help.

### Collected Data for Each Student

- **Positive Votes (P\_votes):** Number of votes for positive behavior.
- **Negative Votes (N\_votes):** Number of votes for negative behavior.
- **Help Votes (H\_votes):** Number of votes indicating the student needs help.

## Step 2. Calculating Student Individual Behavior Score (SIBS)

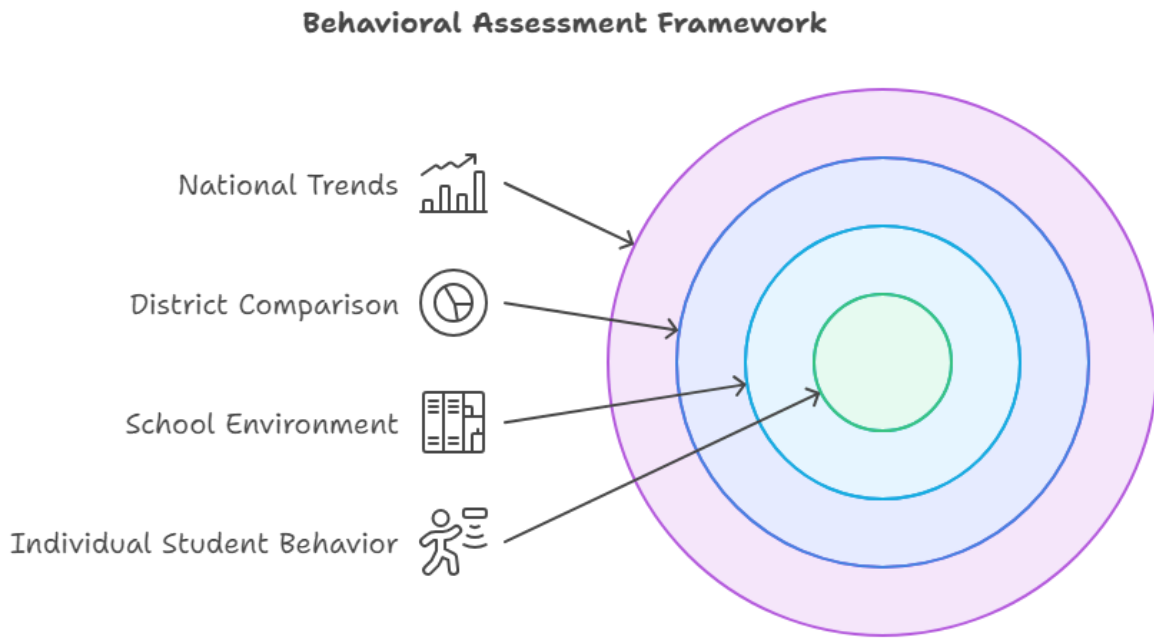
Based on the votes received by a student, the **Student Individual Behavior Score (SIBS)** is calculated that indicates how that student comes across to his/her peers:

$$\text{SIBS} = \text{P\_votes} - \text{N\_votes}$$

H\_votes are considered as a separate category as they indicate their situation that requires help and cannot be considered as a positive or negative behavior. Whoever gets H\_votes should be helped by teachers irrespective.

- A **positive SIBS** means the student comes across as a positive leader.
- A **negative SIBS** means the student comes across more as a negative influence and may need to be guided.
- The **size or absolute value** of the score shows the impact their behavior is having on the school environment (higher number = more impact).

## Step 3. Identifying Patterns & Generating Reports



### A. For Individual Students

#### 1. Monitor Student Progress

Track students' individual behavior scores (SIBS) over time to see patterns and trends and if they have any changed behaviors after training programs or specific actions taken by the school.

**Example:** A student starts with SIBS of **-3** in the first semester but improves to **+2** by the end of the year means this specific student's behavior has changed for the better as the school year progressed.

#### 2. Identify Students for Support

Students who get **Negative votes** repeatedly can be identified for closer monitoring and additional help.

Students who get **Needs Help votes** repeatedly may need counseling, special attention, or social support. They may even be experiencing a racial / gender / any other bias or a difficult financial or family situation that may be impacting the student.

### 3. Check Stand Alone Positive and Negative Vote Charts in addition to the Behavior Score (SIBS) chart

In cases where Student A has 20 positive and 25 negative votes and Student B has just 5 negative votes, though both students have the **same behavior score**, in case of Student B, there is no positive score at all. This means that Student A engages a lot more with many students, but the overall feedback is more negative than positive, though many students do also see him/her as a very positive student.

For situations like these, it is important to **also see the individual Positive and Negative vote charts** of a student before deciding on the action that needs to be taken.

## B. At the School Level

### School Average Behavior Score (SABS)

The School Average Behavior Score (SABS) of all students in the school indicates the overall behavioral environment of the school.

$$\text{SABS} = \frac{\text{Sum of SIBS of all students who were voted for}}{\text{Total number of students who were voted for}}$$

### Interpretation

- A **positive SABS** means there is a **positive school environment** and that students are generally helpful and get along well.
- A **negative SABS** means that there is **more negative behavior** among students than positive and the school can take appropriate action to help make it better.

## C. At the District Level - For a District with Multiple Schools

*(Note: The Current SIFT App is at a stand alone school level, but a district level version can be created to compare schools at the district level.)*

### 1. Compare School Scores (SABS)

Compare the School Average Behavior Score (SABS) of different schools to see schools that have a better environment and those that may need some help.

Consequently, a deeper analysis can help identify good practices that are working in schools with good scores.

## 2. Track Changes Over Time

Track the SABS of schools across semesters or years to see whether or not they are improving after training programs or specific events.

## D. For State or National-Level Reports:

Similar to District Level reports, State or National level comparisons can be done offline or can be built into the app to study Behavioral Trends. Data from different districts can be compared to show behavioral trends over regions or states.

This can be used to suggest policy changes or additional mental health programs.

## Step 4. Identify Thresholds and Alerts to Take Action

Since there are many factors other than the school environment that can influence a student's behavior, once a healthy range of behavior scores for a student (SIBS), school (SABS), district, or state has been identified over a period of time, administrators can define their **Thresholds and healthy ranges**:

- **Positive Environment/ Behavior:** Schools or students with scores more than threshold (e.g., **B\_score > +2**).
- **Neutral Environment:** Schools or students with scores between **-1** and **+2**.
- **Negative Environment:** Schools or students with behavior scores below **-1**.

These thresholds can act as guides for Alerts / actions that the school needs to take.

**Example:** If a student's score falls below **-3** for three months in a row, the school can decide to have a counselor meeting with the student. For schools, if the average score falls below **0**, districts can decide to increase behavior programs.

# Examples

## Example 1: School Report (School Average Behavior Score)

School A has 300 students, and over the past year, its average behavior score (SABS) is **+3**.

- **Interpretation:** School A has a mostly positive student environment, with most students showing good behavior.
- **Action:** Continue to support positive behavior with recognition programs.

## Example 2: Student Individual Behavior Score (SIBS) Report

Student B received the following votes over 3 months:

**P\_votes:** 2

**N\_votes:** 5

**H\_votes:** 1

- **SIBS** (Student Individual Behavior Score) :  $2-5=-3$  and 1 H\_vote indicating a possible social adjustment issue.
- **Interpretation:** Student B is mostly seen as a negative influence or in need of help.
- **Action:** A counselor meeting should be planned.

## Example 3: District-Level Report Comparison

District X has 5 schools:

School	SABS
A	<b>+2</b>
B	<b>-1</b>
C	<b>+5</b>
D	<b>0</b>
E	<b>-2</b>

- **Interpretation:** Schools B and E need help to improve the school environment. Schools C and A are doing good and their school policies can be applied to other schools to help.