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Web Development
Storyboarding

Project Manager
User Researcher
Designer

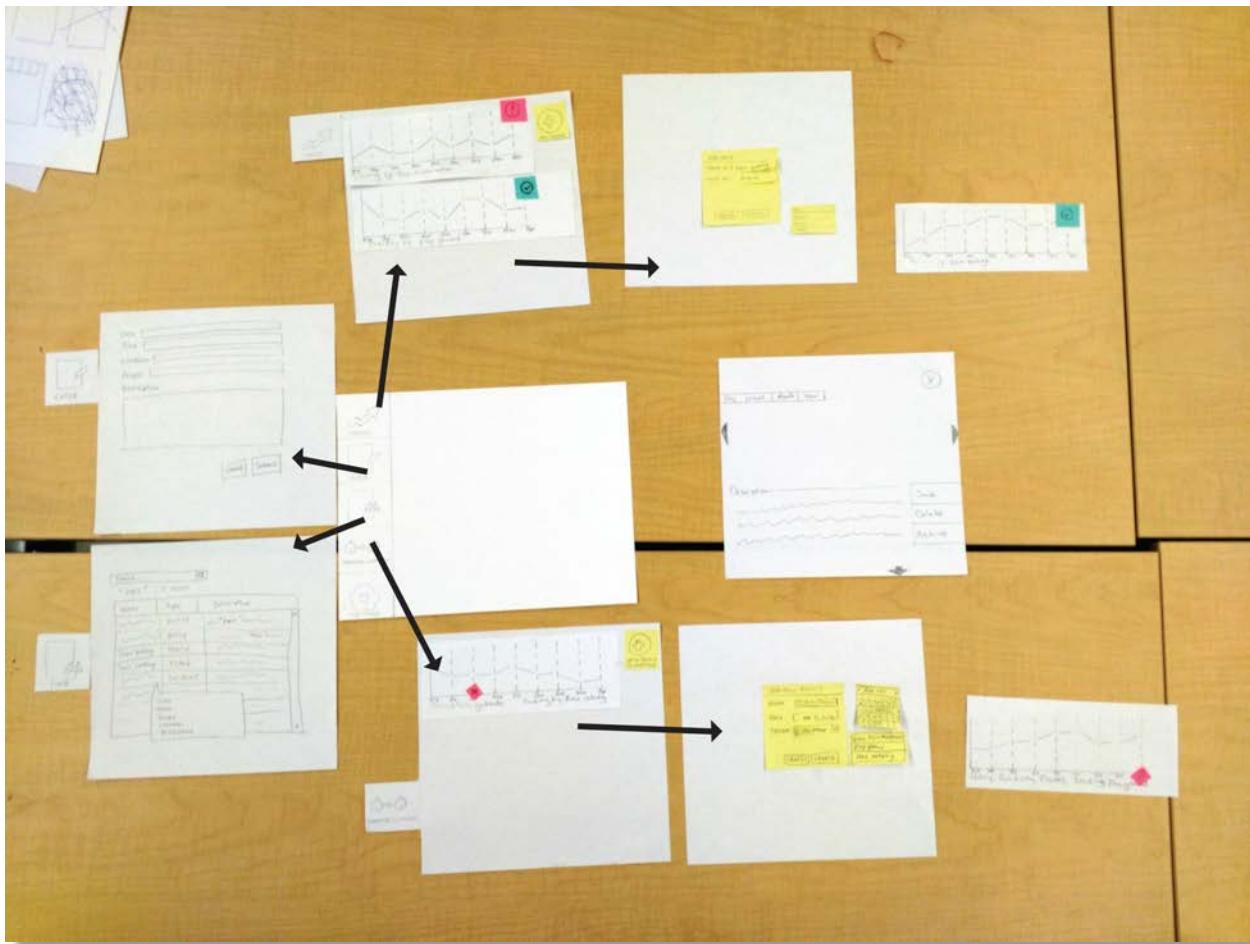
Writer
Storyboarding

Problem and Solution Overview

Middle school is where the most frequent and severe bullying occurs today. Our project addresses the need for teachers and administrators to track and gain insight into bullying behavior trends in order to implement or refine current school policies to address bullying among middle school students. Our web-based design offers tools to teachers that expand solutions beyond simply punishing individual students and promote systemic, school wide changes and track their results.

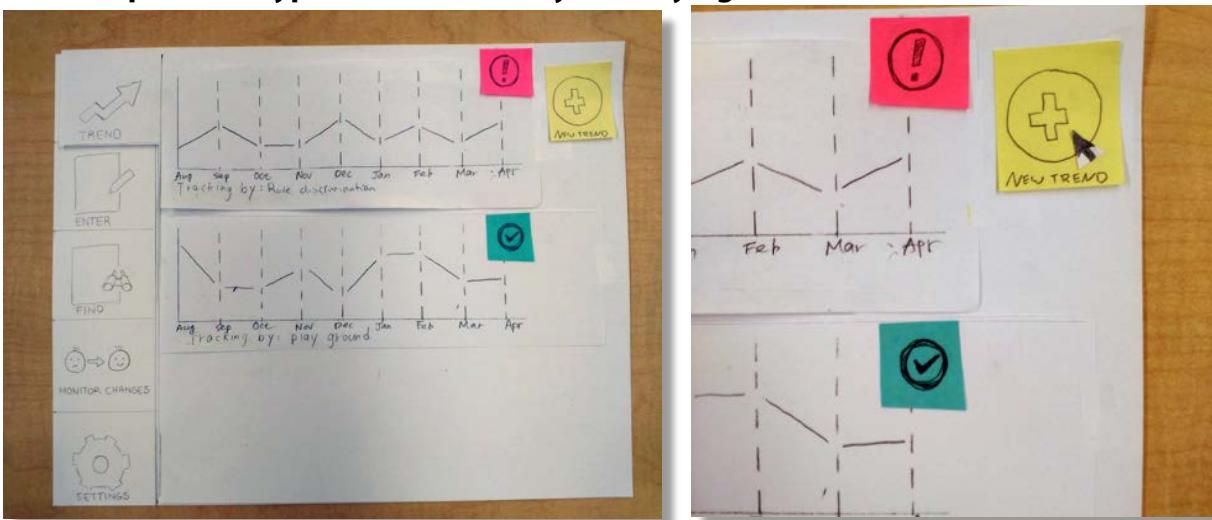
Initial Paper Prototype

Overview



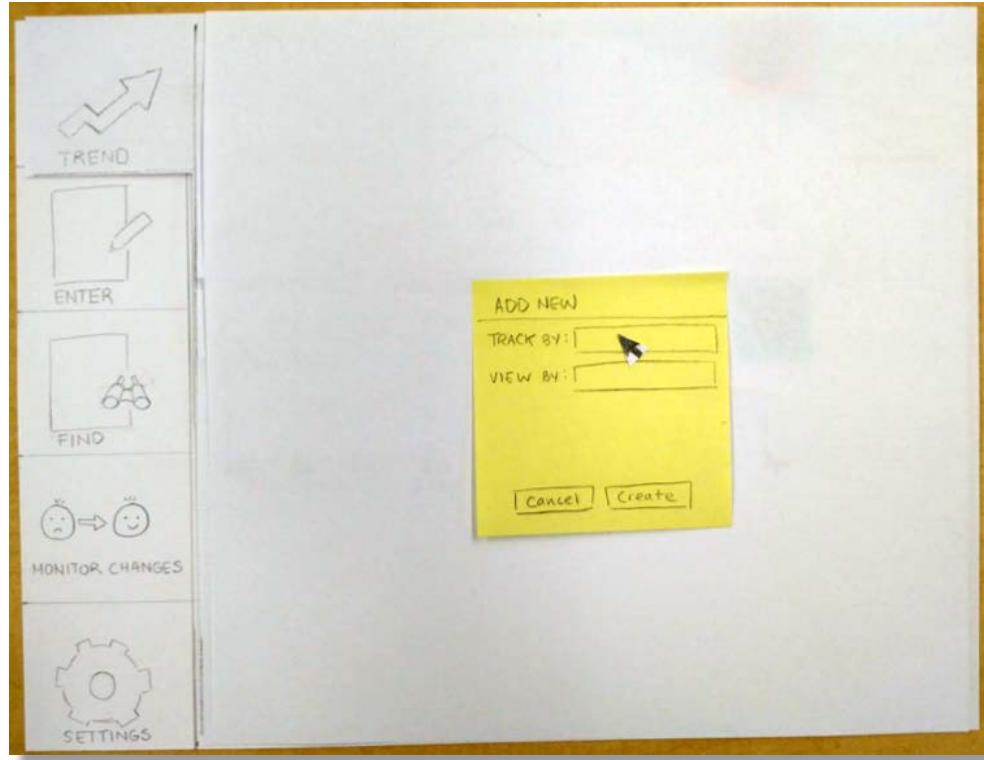
Our original design was derived from the best parts of 3 sketches and supported our two primary tasks.

Initial Paper Prototype Task 1: Manually Identifying a Potential Trend to be Tracked

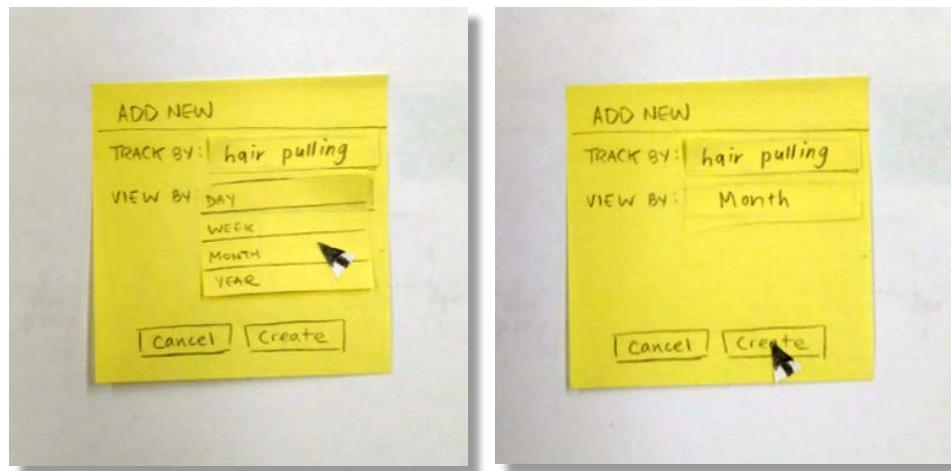


1a. The user wants to specify a set of data to track because they think they may see a trend now or later. On this screen, they see two existing types of data that are already being tracked. The exclamation mark indicates a system suggestion, and the check mark indicates a data set the user has already saved.

1b. In order to specify data to track, the user clicks on the “new trend” icon on the upper right corner of the home page.

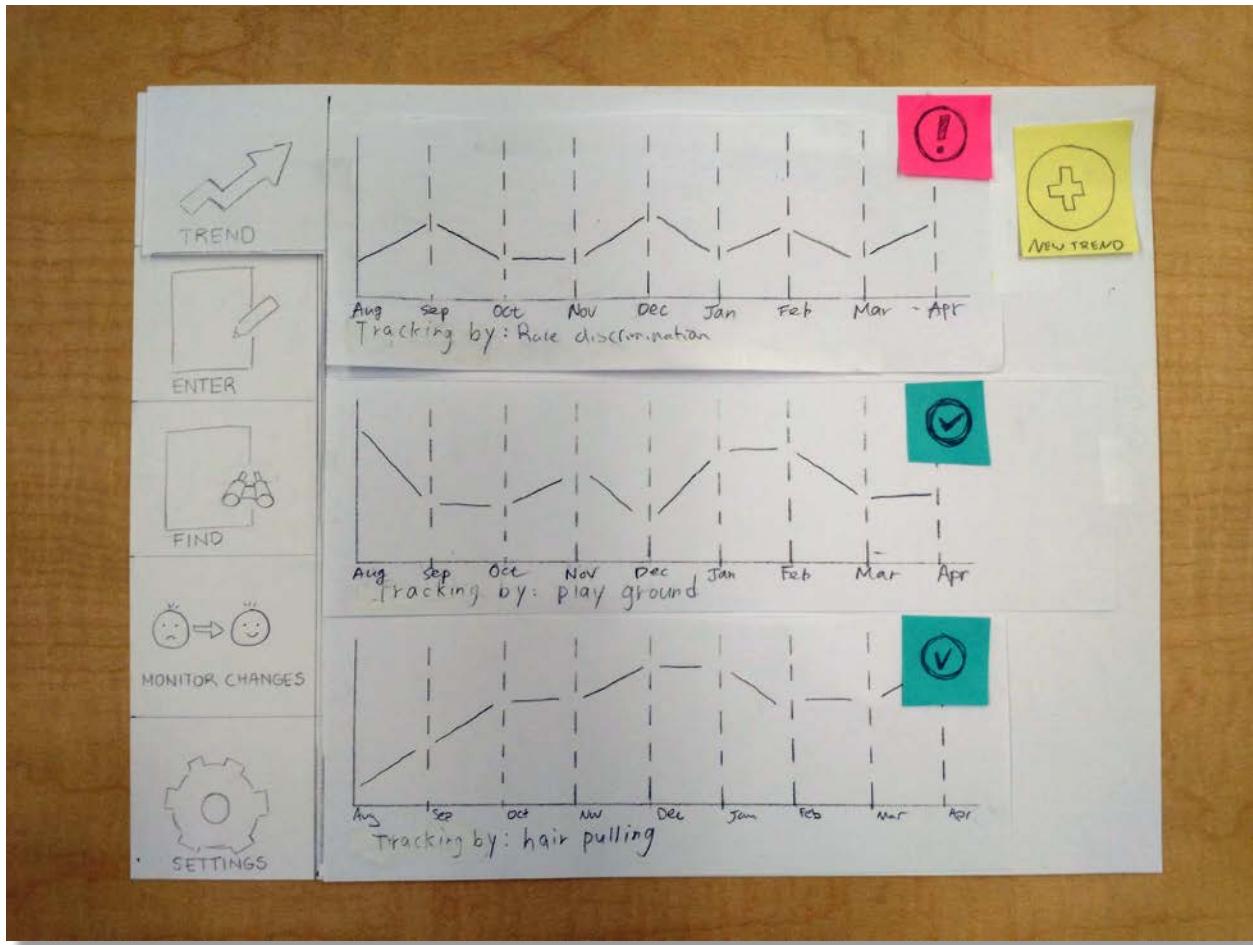


1c. A box is overlaid where the user can specify what data to track by using certain keywords and can also decide whether they want to initially display the data by day, week, month, or year.

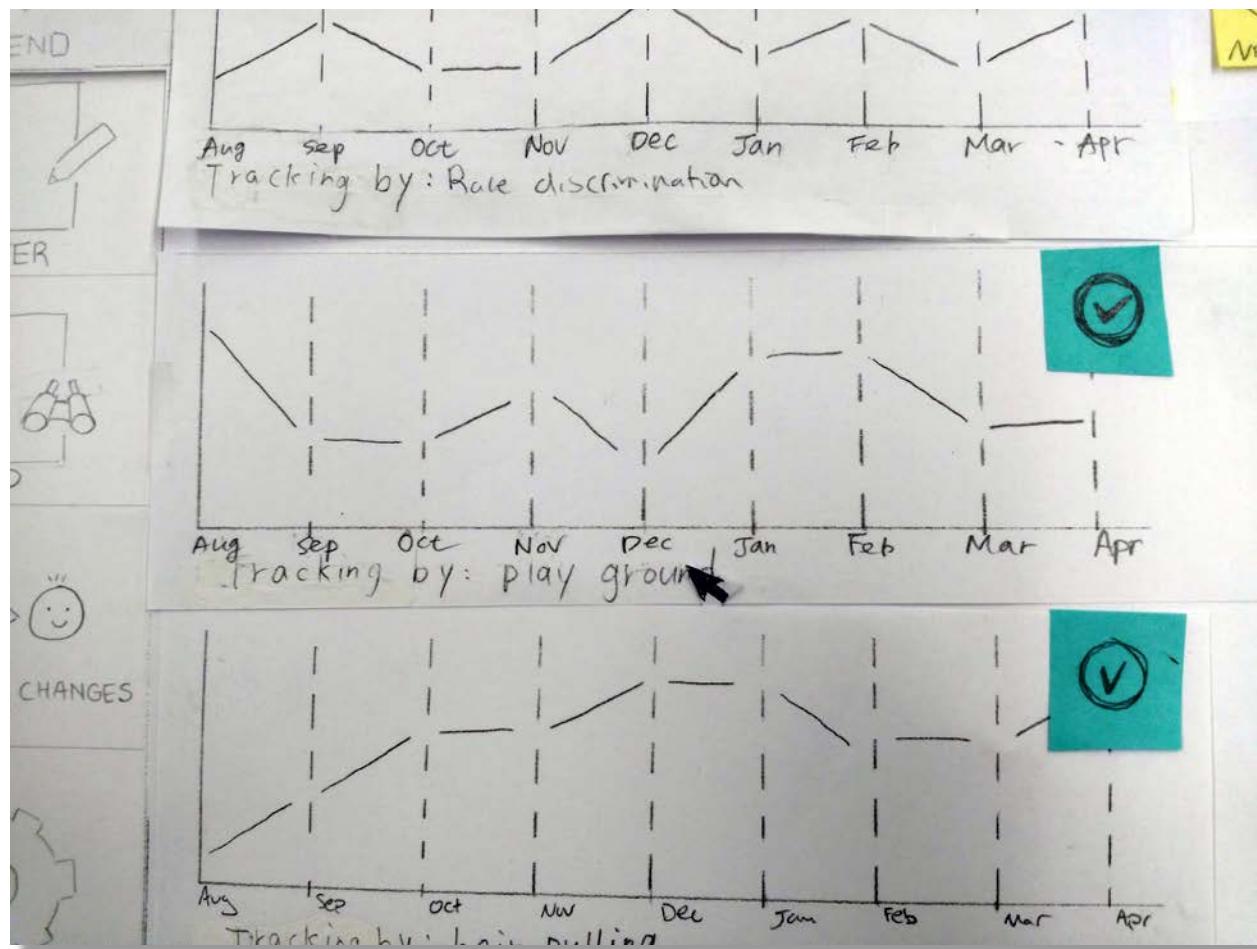


1d. The user types instances of "hair pulling" to track, and sets the view to monthly.

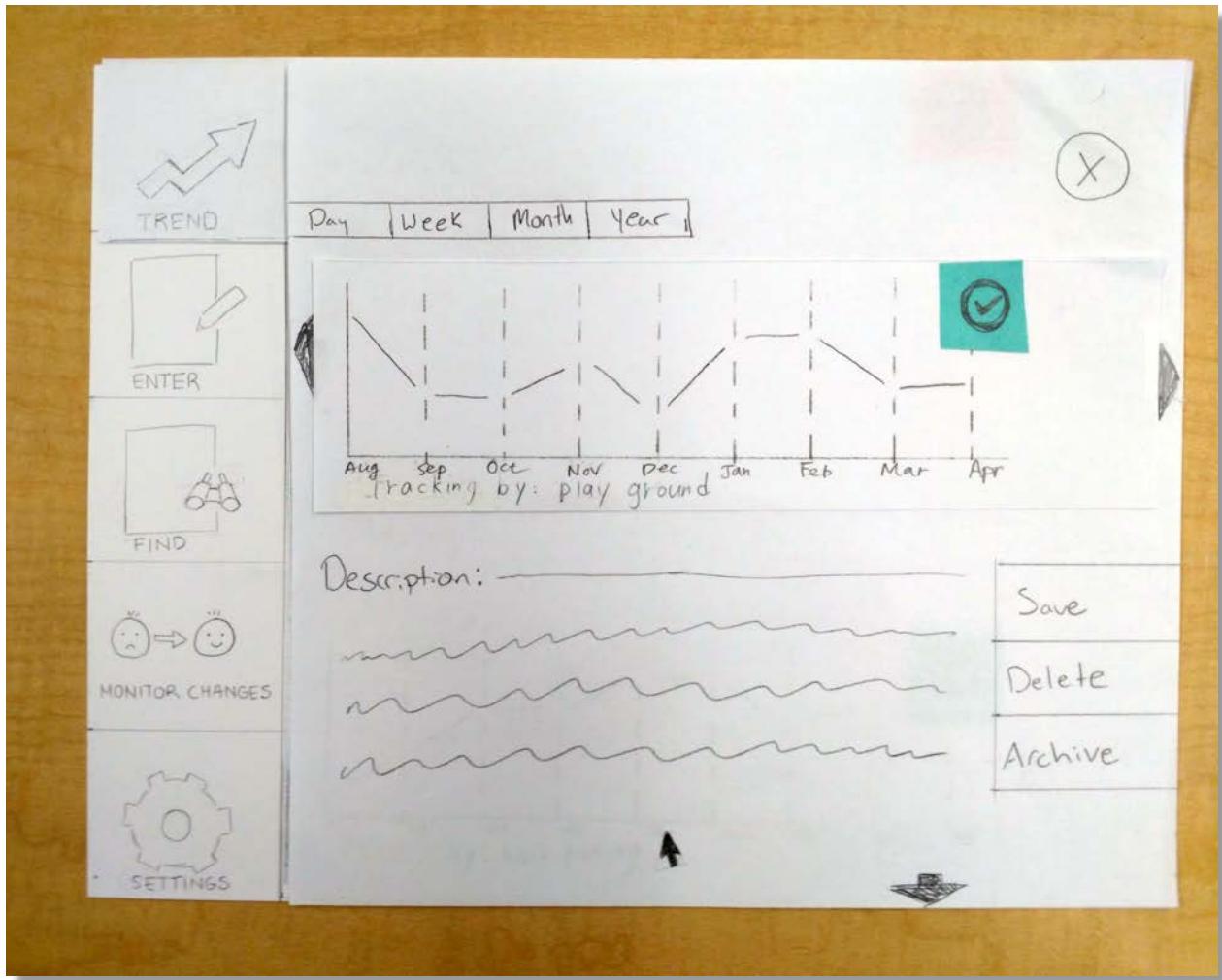
1e. User clicks on "Create" to produce tracking information.



1f. The new "hair pulling" tracking report is added on the bottom part of the trends page.

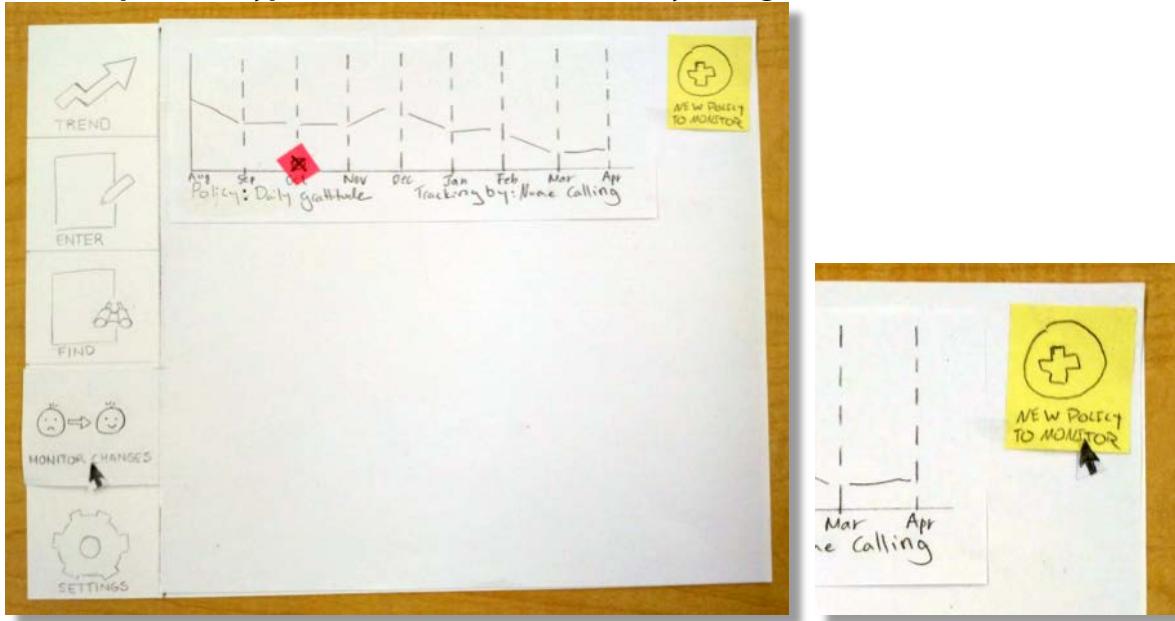


- 1g. The user decides to more closely investigate a data set already being tracked.
By clicking the tracking box, the view expands.



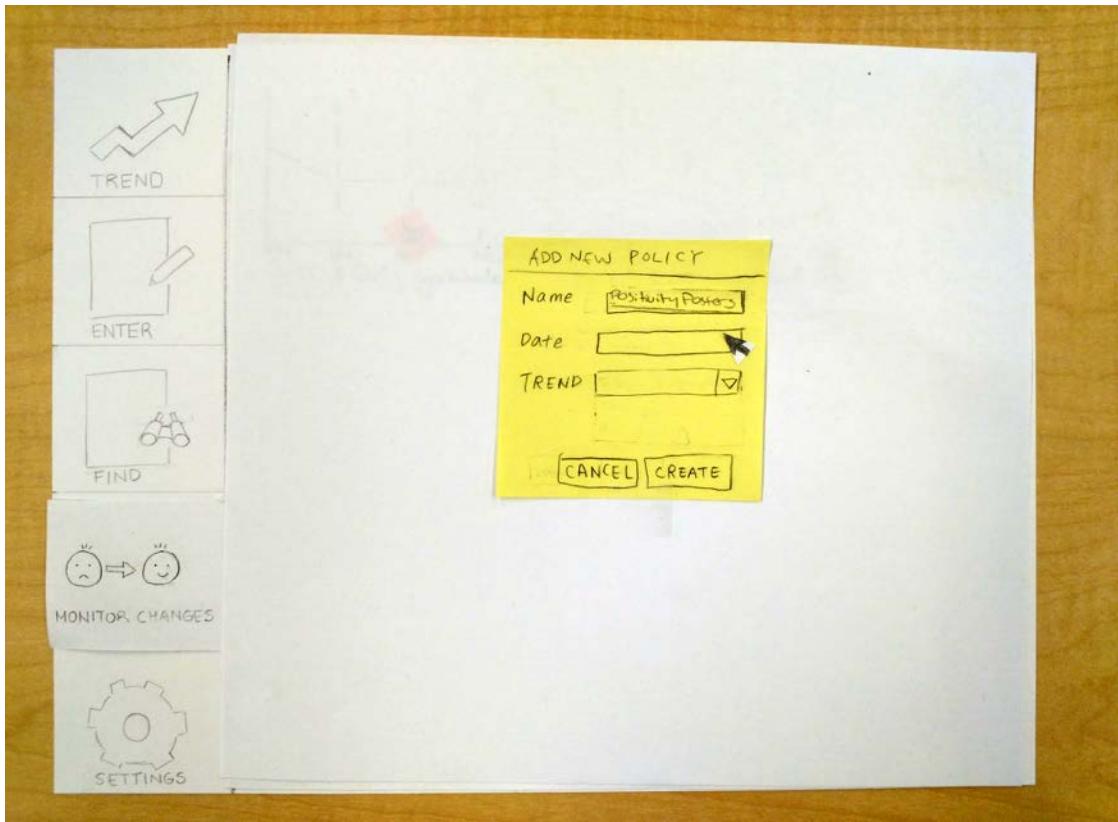
1h. The user can obtain more detailed information regarding a specific tracking report. This page allows the user to change the time scale, navigate forwards and backwards in time, as well as save, delete or archive the report. This page also allows the user to edit a description of the tracking set or take notes.

Initial Paper Prototype Task 2: Track Effects of Policy Changes



2a. The user has implemented a new change at their school and wants to monitor its results. They click on the "Monitor Changes" tab, where they see a report they created prior.

2b. To add a new policy, the user clicks the "New policy" icon.



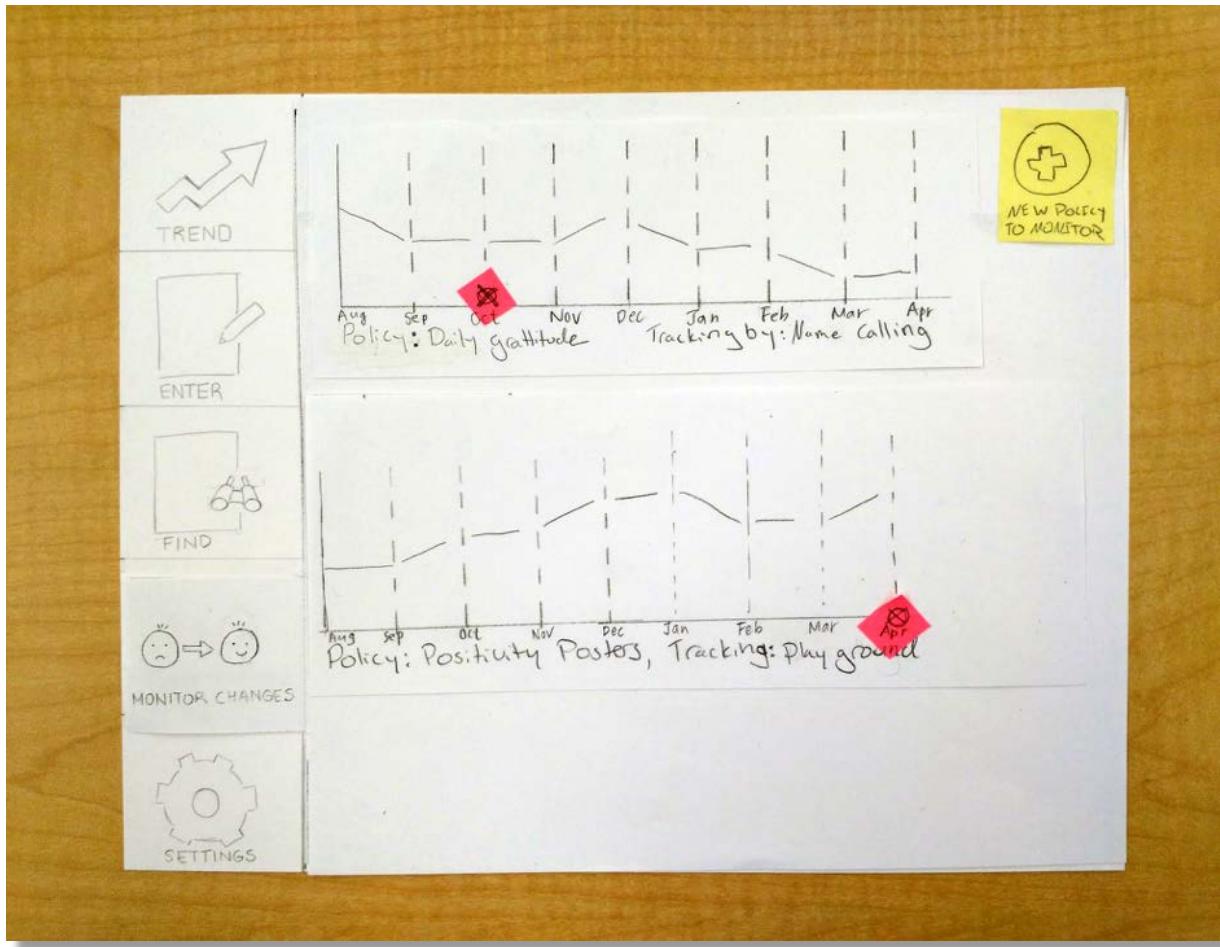
2c. The user is prompted for the name of the policy, the date it began, and which trend they wish to monitor its effects on. In this case, the school has put up positivity posters around the school.



2d. A calendar pop-up lets the user choose the date the positivity posters have been implemented.

2e. The user believes playground behavior will be affected and indicates as such.

2f. The user clicks "Create" in order to finalize this new policy change report.



2g. A new policy tracking report has been added to the bottom of the page and the date of the implementation of the policy has been marked with a circle in pink.

Testing Process

2 In-Class Heuristic Evaluations

Overview:

Our participants were fellow classmates in CSE 440 Intro to HCI. Following the heuristics guidelines, they were able to pinpoint flaws that they saw in our design.

Protocol:

We introduced our participants to our project and what design problem is sought to solve. Our participants then were allowed to freely explore the design and communicate heuristic violations as they saw them. We had participants write these violations on cards and rated them based on severity and ease of correction. After this, we made changes to our design before conducted usability tests.

3 Usability Testing Sessions

Overview:

The limited availability of our target user demographic proved too challenging to recruit for our usability testing procedure. Our group decided that spending time on the creation and revision of the prototype was more important than spending substantial time seeking middle school teachers who had not already been exposed to our design to test our design. Instead, we provided background information and motivation to our participants.

Roles for Each Team Member:

Kyle played the role of the computer, Ji Soo had the role of the test administrator, and Chia-Han the note taker, for the first two tests. For the third test, Ji Soo was the note taker and Kyle and Chia-Han were the test administrator and computer. After the test, we asked the participant for their thoughts and opinions.

Protocol:

We first explained that we were in CSE 440 and testing a paper prototype for ease of use. We assured the participant that there were no wrong answers and that this was a test of the system rather than the individual. After some background information on the project and asking the participants to imagine themselves as a teacher, we gave them two tasks.

1. You have noticed a student pulling their classmate's hair, and are interested in tracking all of the incidents of hair pulling in your school. Begin tracking this data.
2. Your school has recently put up positivity posters in an effort to curb playground aggression. This policy was implemented April 15, 2015. Track the effects of this policy.

Participants and experience:

Participant 1: A UW student with experience in interaction studies, was chosen because he was a friend of a group member and had experience with computer science.

Participant 2: A UW student who was interested in the project and excited to participate, leading us to believe his insight would be thoughtful and helpful. We improved the way we explained the purpose of the test and introduced the scenario and tasks after gathering some feedback from participant 1.

Participant 3: A current HCI+D student, who asked to participate because she was a friend of a group member and had experience conducting and participating in usability studies. This was the smoothest of the 3 tests, as changes to the design had been made and we were fluent in our protocol.

Testing Results

Heuristic Evaluations: Issues and changes

Heuristic Violated	Specific description of problem	Change made
Consistency and standards	Lack of consistency in usage of "Save" button	Save button changed to Subscribe
	Confusion over the use of "Archive" button	Archive function removed
	Clarification of "Monitor Changes" tab	Monitor Changes changed to Monitor New Policy
Help and documentation	General function confusion	Tutorial added
	Y-axis label needed	Y-axis appropriately labeled
User control and freedom	Multiple trend monitoring wanted	Multiple trend monitoring functionality added

Design Critique

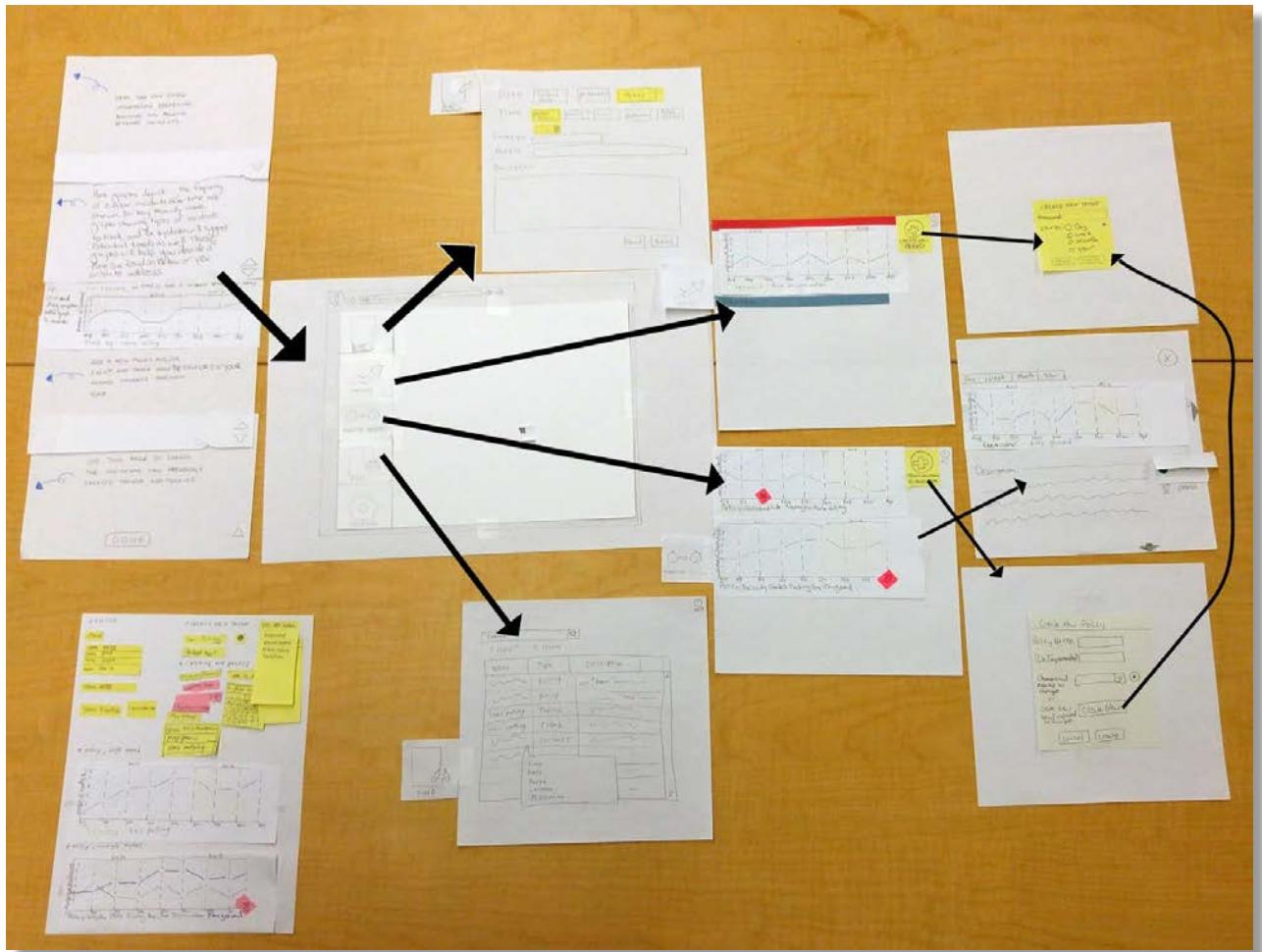
Problem	Specific description of problem	Change made
Symbol confusion	System suggested trend and manually created trend had an exclamation mark and check mark	Categories now define these instead of symbols on top of the graph

Usability Testing: Issues and changes

Test / User Number	Specific description of problem	Change Made
1	"Add a new policy" functionality box is not clear to the user	Changed "add new policy" to "create new policy to monitor"
	When instructed to create a new policy change, he chose to click on "Find" in order to find the trend to be tracked to later add a policy change	Changed navigation tab order for better user flow and improved the tutorial
	He'd have liked to see a button saying "Create a new policy" rather than "New Policy" because using a verb is more specific	Changed "new" to "create" in both trend and policy buttons
2	No current year labeled in the chart	Added current year on the top of the chart and used color to differentiate the years
	The introductory explanations of the first 2 functions are too long and hard to follow	1. Changed the tabs to lessen the participant's confusion by ordering the tabs by relation between tabs and ease of use 2. Added help button to the top-right corner 3. Changed the description in the tutorial
	While creating a new policy, it is hard to understand what to type in for "name"	Changed "name" to "policy name"
	"ENTER" is hard to connect with "incident"	Changed "ENTER" to "ENTER INCIDENT"
	While the user is creating a new trend, he doesn't know what to type in for "track by" and wonder what if a different user used different phrase to indicate the same thing?	After clicking on the textbox of "Track by", we will give hint to user by a data type clarification box appears, also implemented "folksonomy" suggested keyword
	Confusion over the meaning of "View by"	Changed drop down menu to radio boxes so the options are immediately visible
	The user wanted to order the task by importance OR sort by place/event	Supported drag & drop function. We had not thought of this feature existing, so we will allow users now to click and drag graphs to move them and inform them of this function in the tutorial slide
	Hard to understand at the beginning, what will I get after I input a incident and what does the trend represent?	Added an example image in the introduction
3	"Enter Incident" page is asking for too much information to be manually entered by the user	We revamped the page by adding some pre-selected options and more easy-to-fill selection boxes
	Participant tried to swipe up/down when progressing through the tutorials when first using SchoolView	Participant figured out that we had drawn arrows to progress through the tutorials with minimal confusion so nothing was changed

Final Paper Prototype

Overview



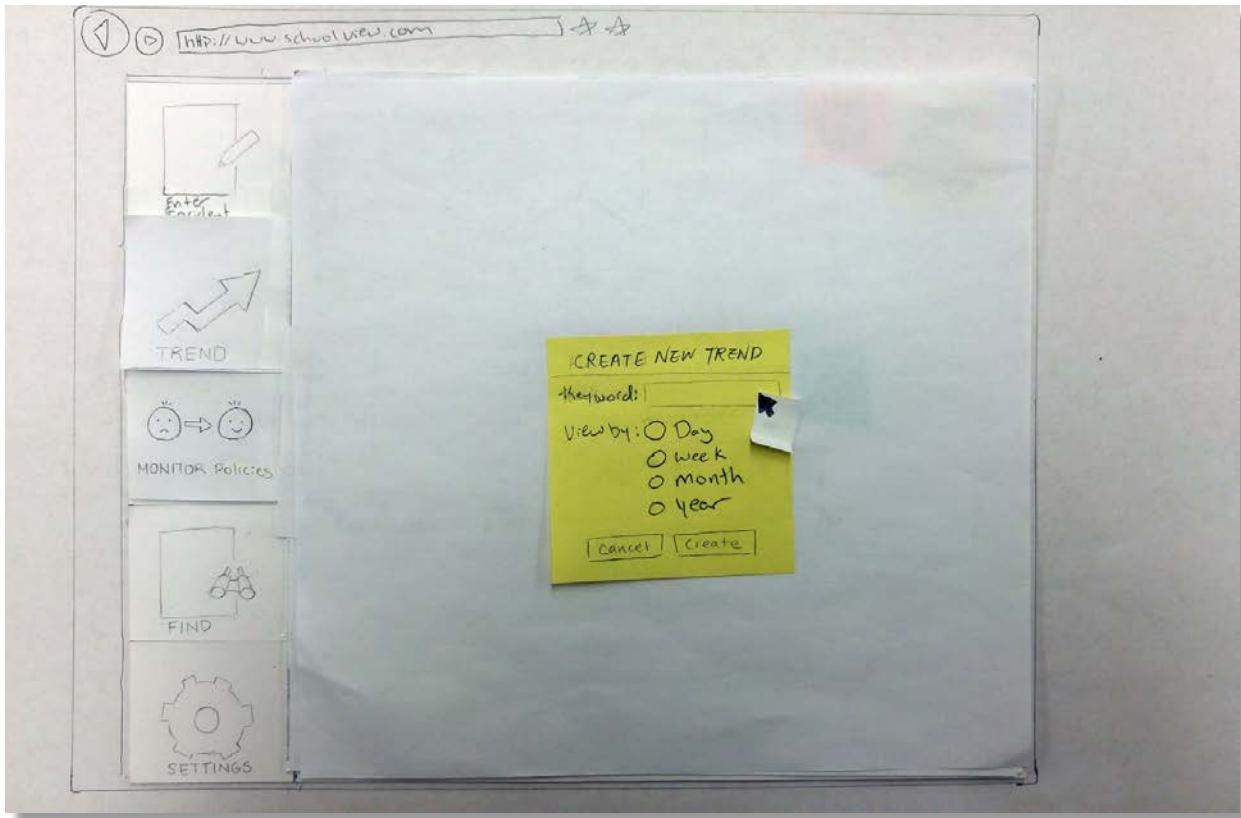
Major changes include: introduction and refinement of tutorial, addition of web browser background, major creation screen revisions and trend screen now displays categories of user created and system suggested trends.

Final Paper Prototype Task 1:

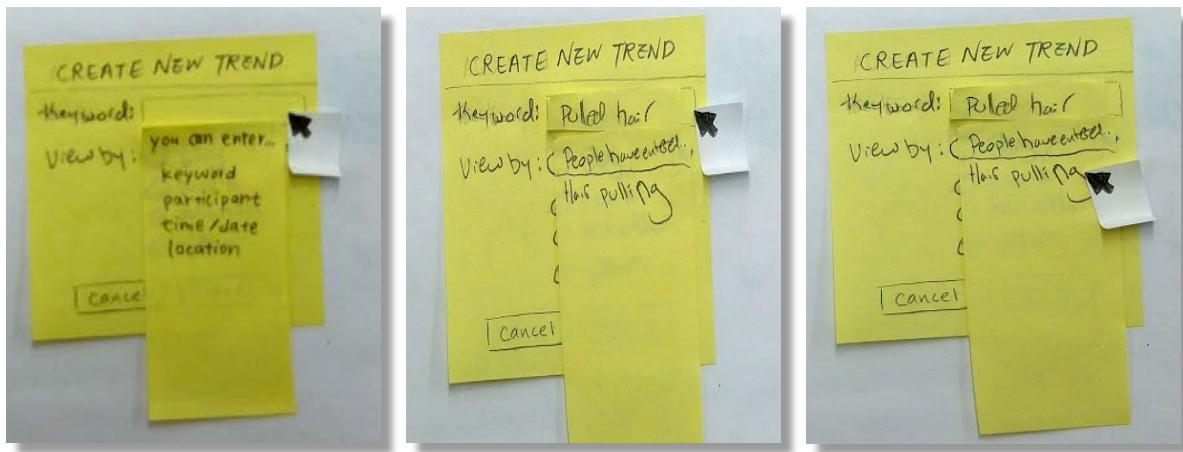
You have noticed a student pulling their classmate's hair, and are interested in tracking all of the incidents of hair pulling in your school. Begin tracking this data.



- 1a. The user wants to specify a set of data to track because they think they may see a trend now or later. The top category indicates system suggestions, and lower category indicates a data set the user has already saved. In order to specify data to track, the user clicks on the "create new trend" icon on the upper right corner of the page.



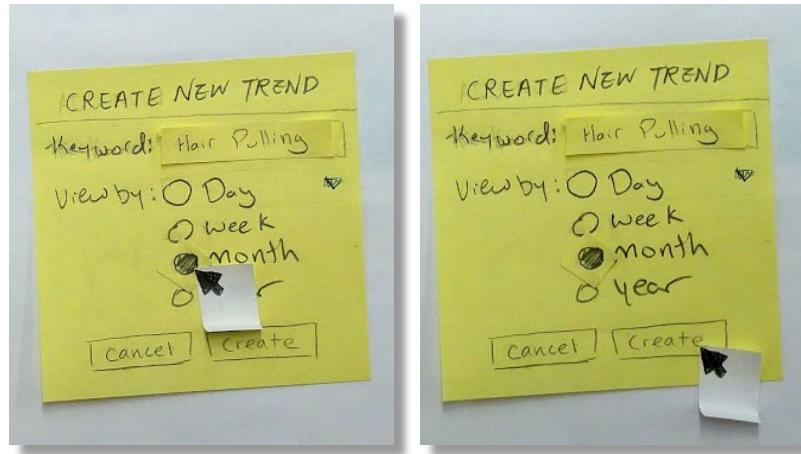
1b. A box is overlaid where the user can specify what data to track by using certain keywords and can also decide whether they want to initially display the data by day, week, month, or year.



1c. A dialogue box appears informing the user what types of information they can enter.

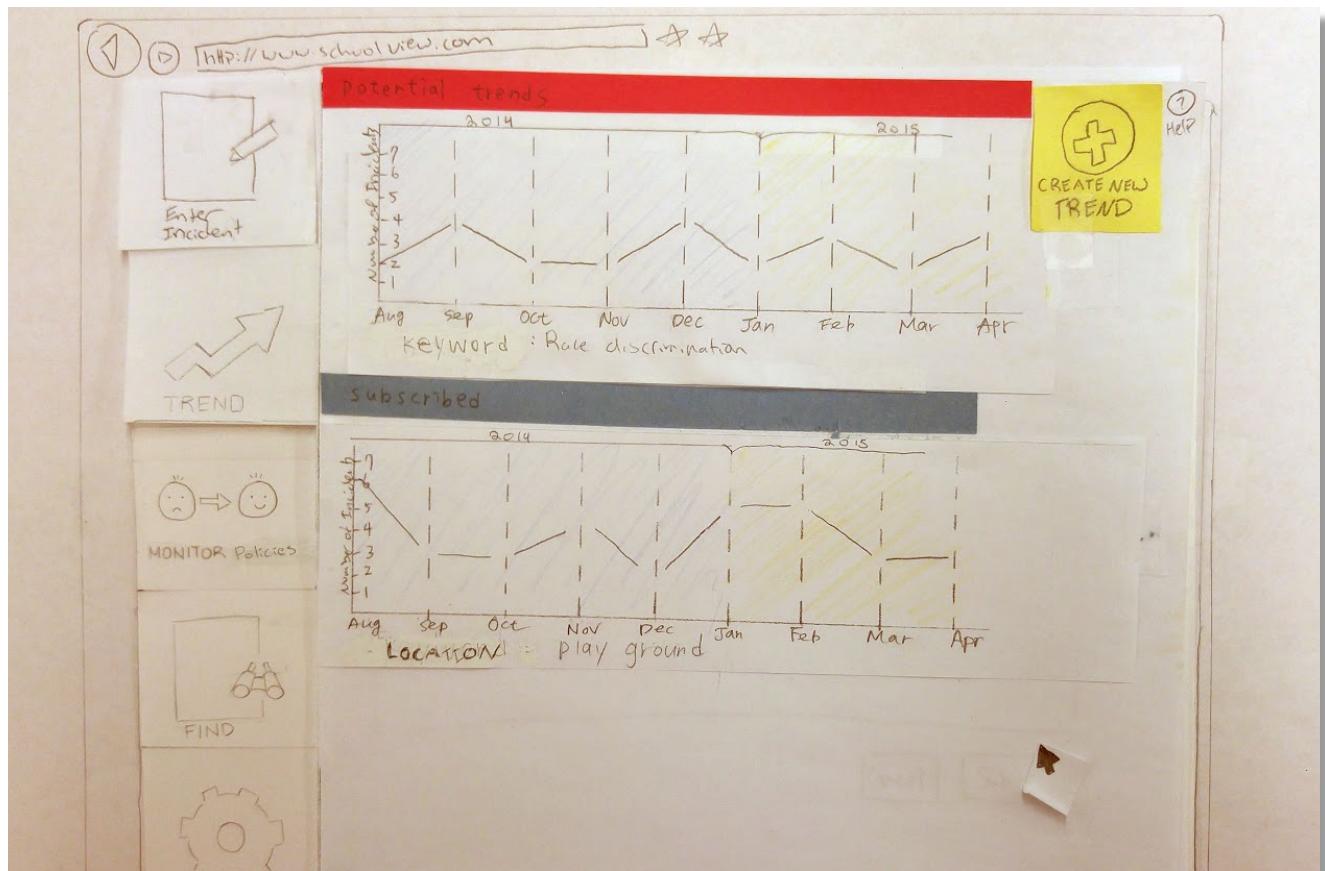
1d. After entering "pulled hair" the system suggests "hair pulling" in an effort to maintain consistency of tagging through a folksonomy system.

1e. The user selects the appropriate suggestions.

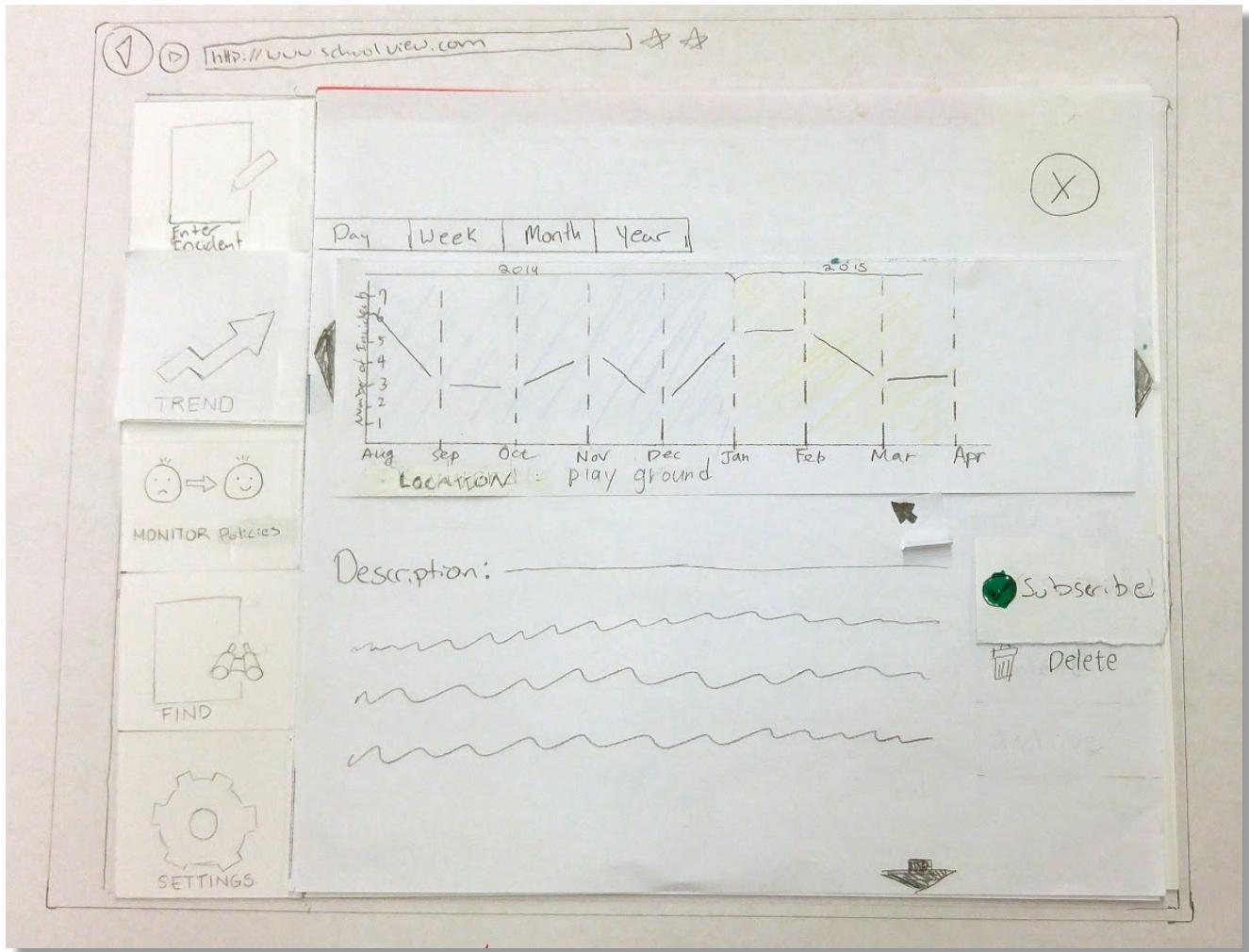


1f. The initial time period to view by is chosen to be months, which can be changed after creation also.

1g. To finalize the creation of this data set to track, "create" is clicked.



1h. Now the graph appears in the "subscribed" section because it was created intentionally. System suggested trends are in the category above it.



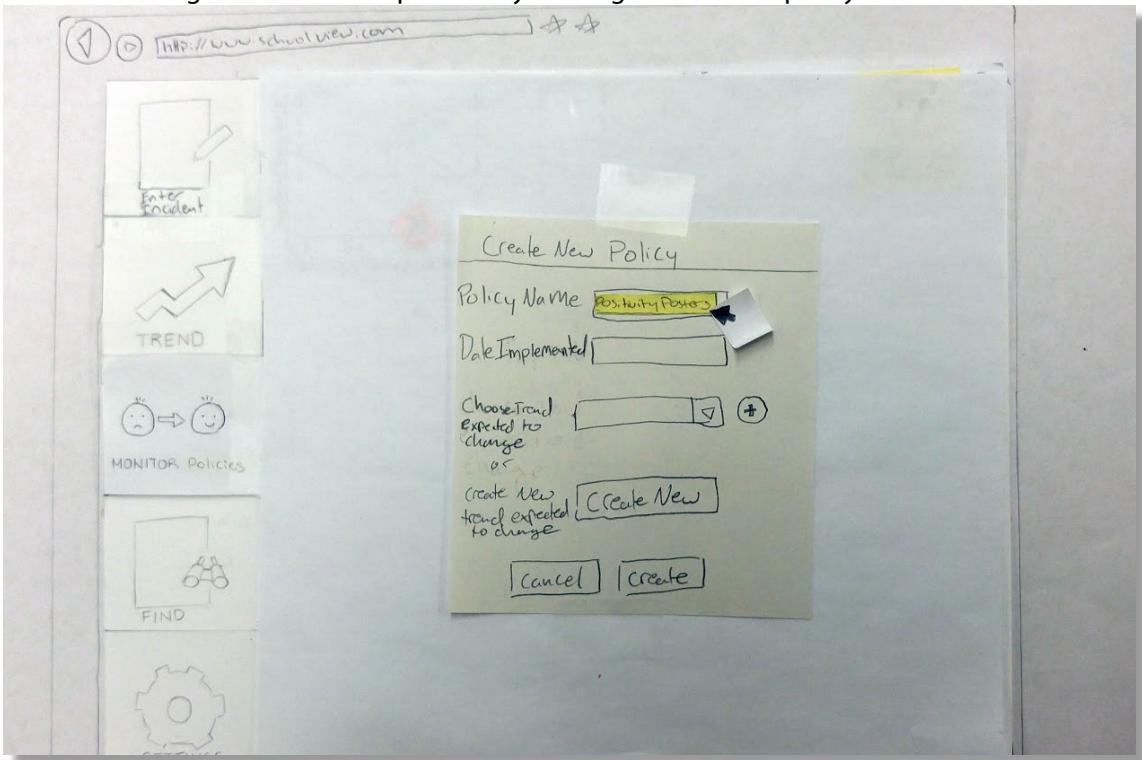
- 1i. To add a description or change the viewing time period, the graph is opened by clicking on it.

Final Paper Prototype Task 2:

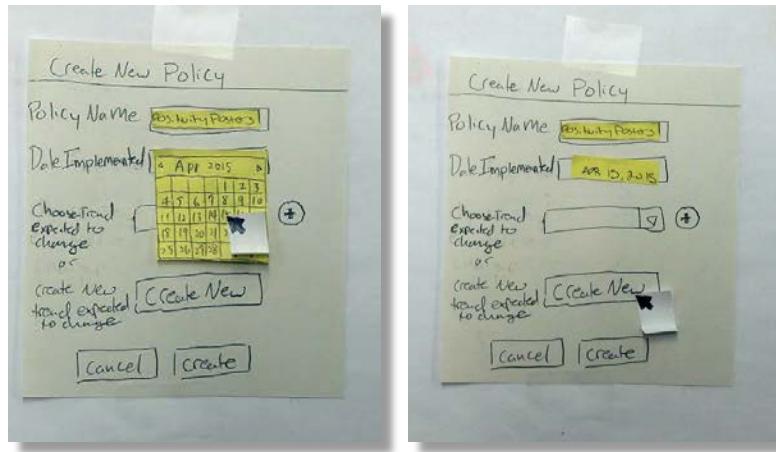
Your school has recently put up positivity posters in an effort to curb playground aggression. This policy was implemented on April 15, 2015. Track the effects of this policy.



2a. The user begins the creation process by clicking "create new policy to monitor".

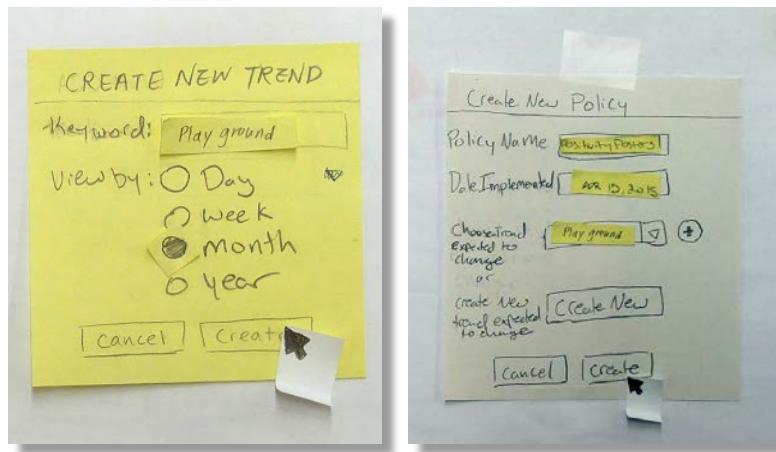


2b. By selecting the text input field, they are able to type the name of their policy



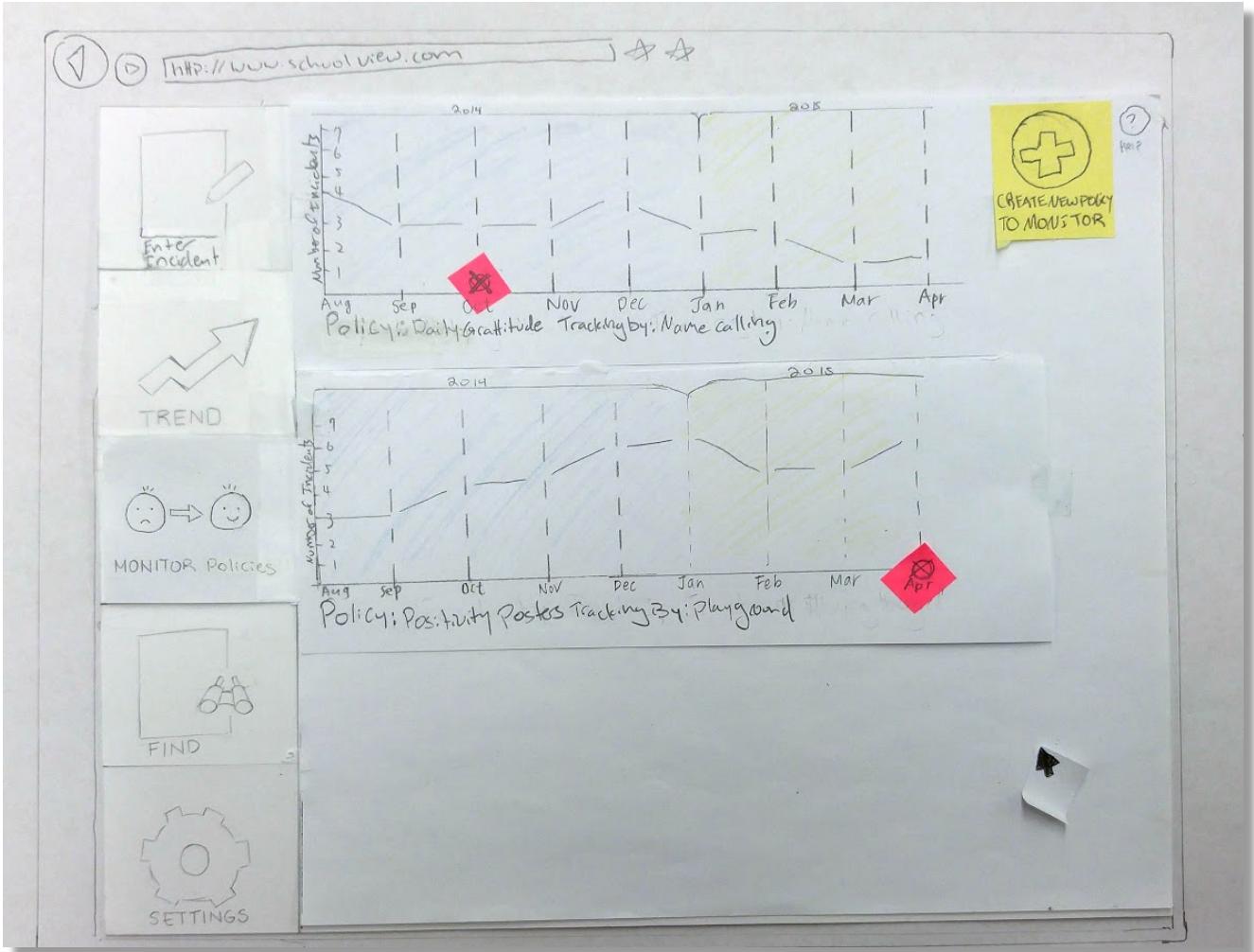
2c. To specify the date the policy began, the user selects the date entry box which expands into a calendar. They click April 15, 2015 to confirm.

2d. The user has not created a “playground” trend in their trend view yet, so they click “create new” to create one now.



2e. They are taken to the familiar “create new trend” box and enter the details.

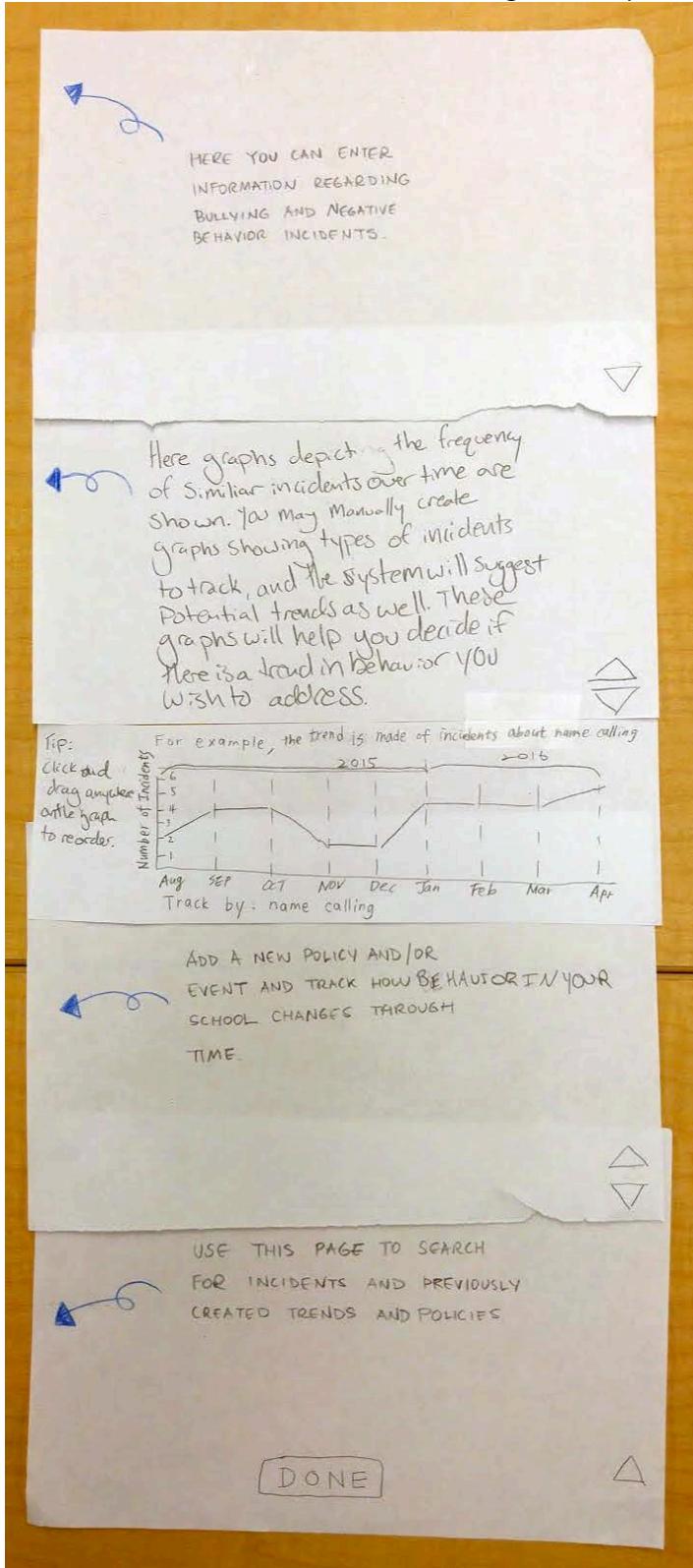
2f. The trend box is automatically filled in with the trend the user just created. They then confirm the rest of the information and click create.



2g. The user views the policy change they just created underneath the one they had created prior.

Tutorial

The tutorial was added to brief the user on the functions of the design when operating for the first time. The content remains available through the help button throughout the design.



Digital Mockup

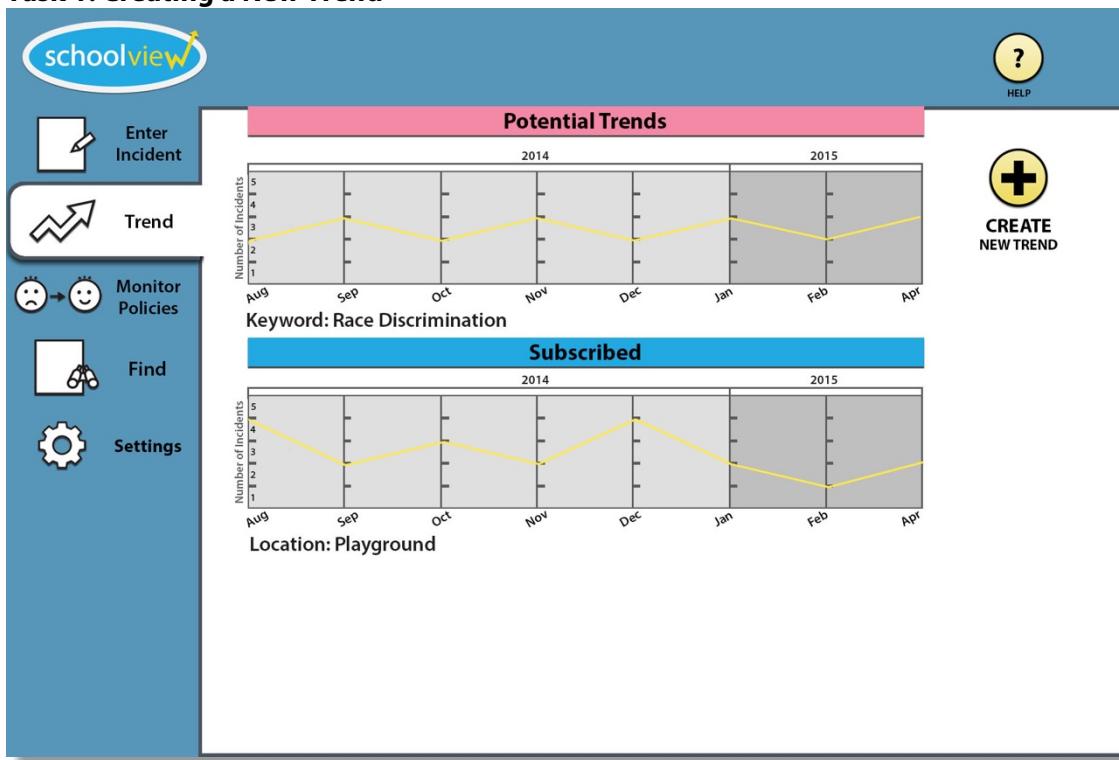
Overview

The digital mockup displays six screenshots of the schoolview software interface, illustrating its features for tracking trends and policies:

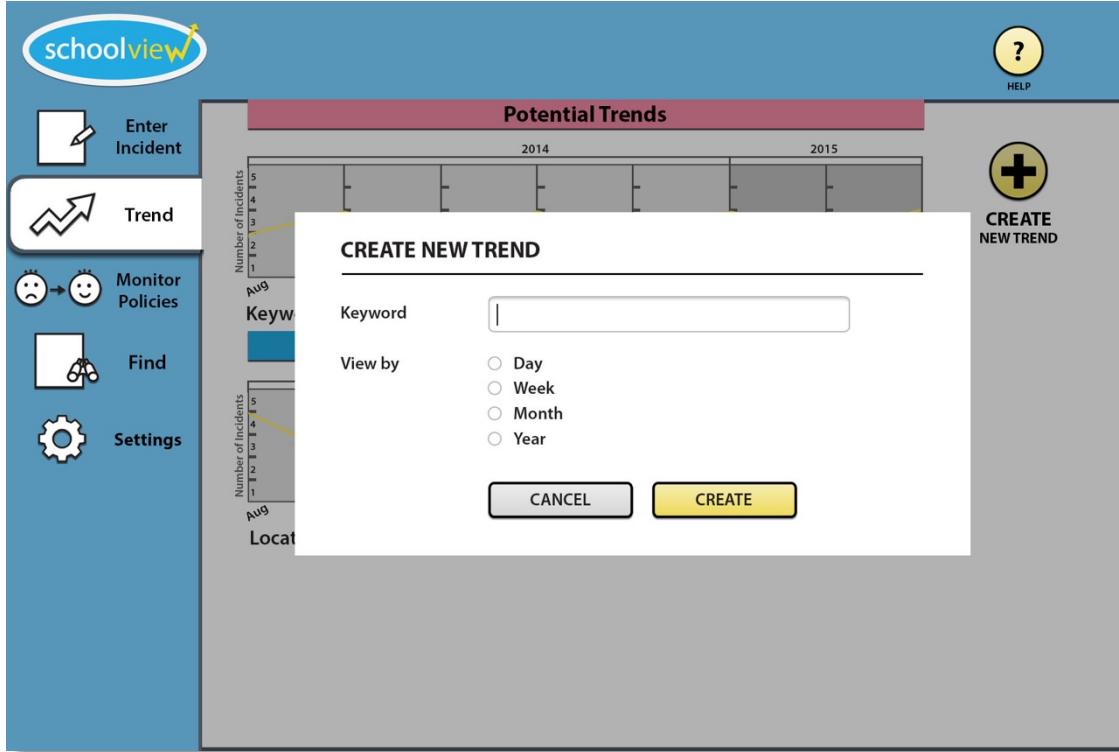
- Screenshot 1: Trend Creation**
Shows the "CREATE NEW TREND" dialog box. A yellow arrow points to the "CREATE NEW TREND" button.
- Screenshot 2: Trend Monitoring**
Shows two line graphs for "Race Discrimination" and "Hair pulling" across four quarters of 2014 and 2015. A yellow arrow points to the "CREATE NEW TREND" button.
- Screenshot 3: Policy Monitoring**
Shows the "CREATE NEW POLICY TO MONITOR" dialog box. A yellow arrow points to the "CREATE" button.
- Screenshot 4: Policy Monitoring**
Shows two line graphs for "Daily gratitude" and "Name calling" across four quarters of 2014 and 2015. A yellow arrow points to the "CREATE" button.
- Screenshot 5: Trend Search**
Shows a callout box with the text: "Here you can enter information regarding bullying and negative behavior incidents". A yellow arrow points to the search input field.
- Screenshot 6: Find Function**
Shows a callout box with the text: "Use this page to search for incidents and previously created trends and policies". A yellow arrow points to the search input field.

In our transition to digital, we kept most of our design the same. We added a top bar that is common for websites, which holds the “help” button and shrunk our left side navigation tabs. We also changed the final step on task two to demonstrate the ability to track two trends under the same policy.

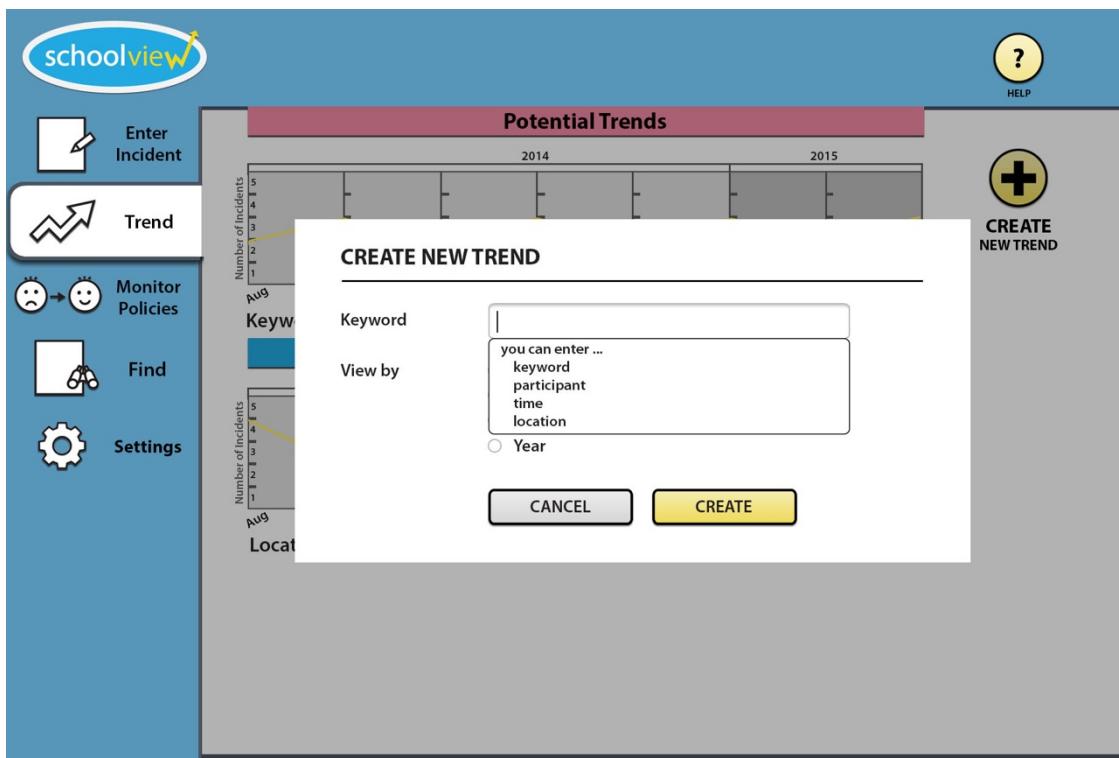
Task 1: Creating a New Trend



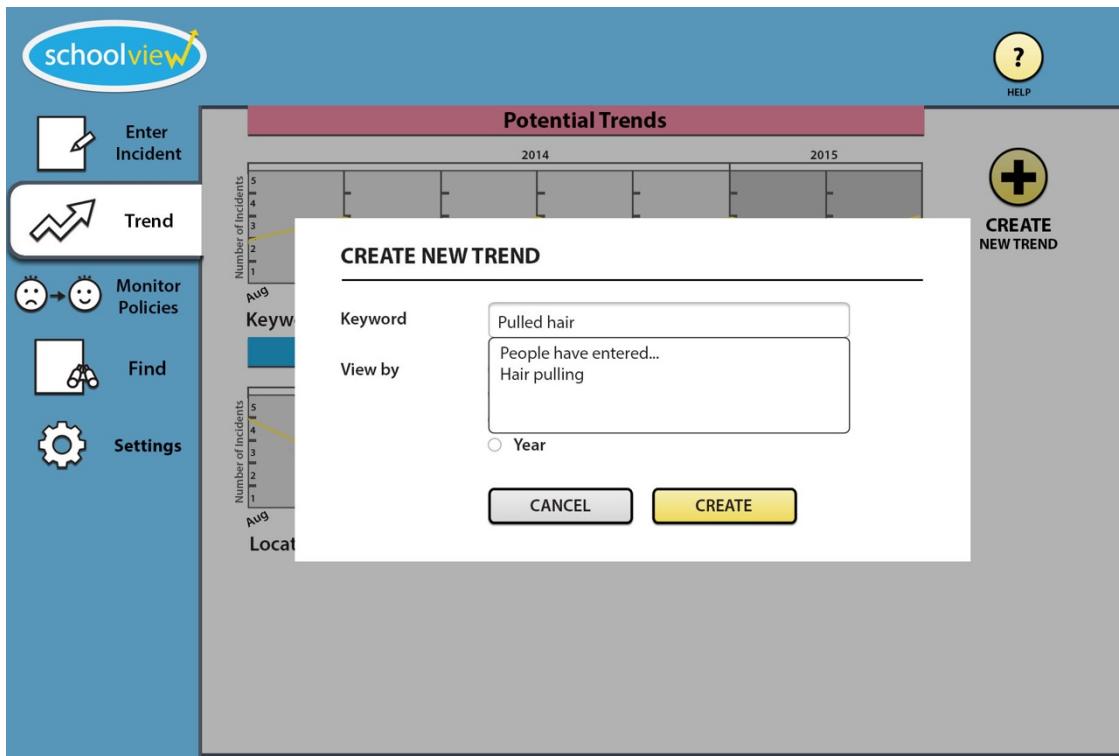
1a. The user navigates to the trend page.



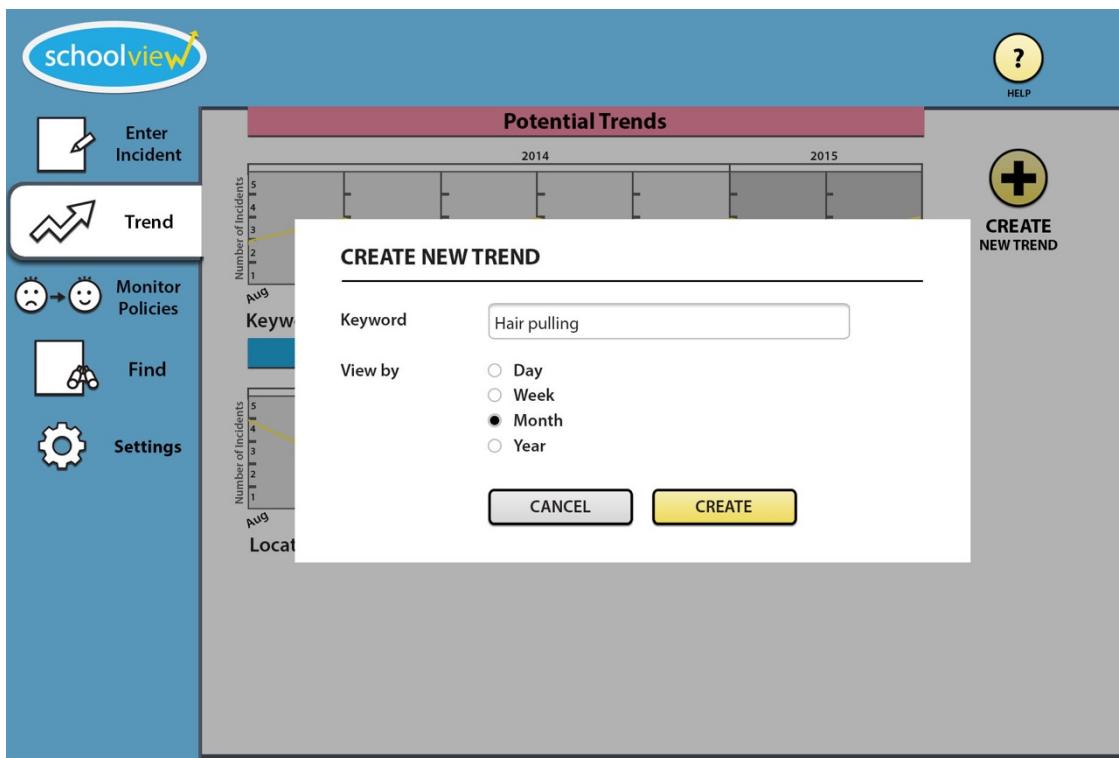
1b. After user clicks on the plus sign on the upper-right corner the trend creation screen appears. The user clicks the first text entry field.



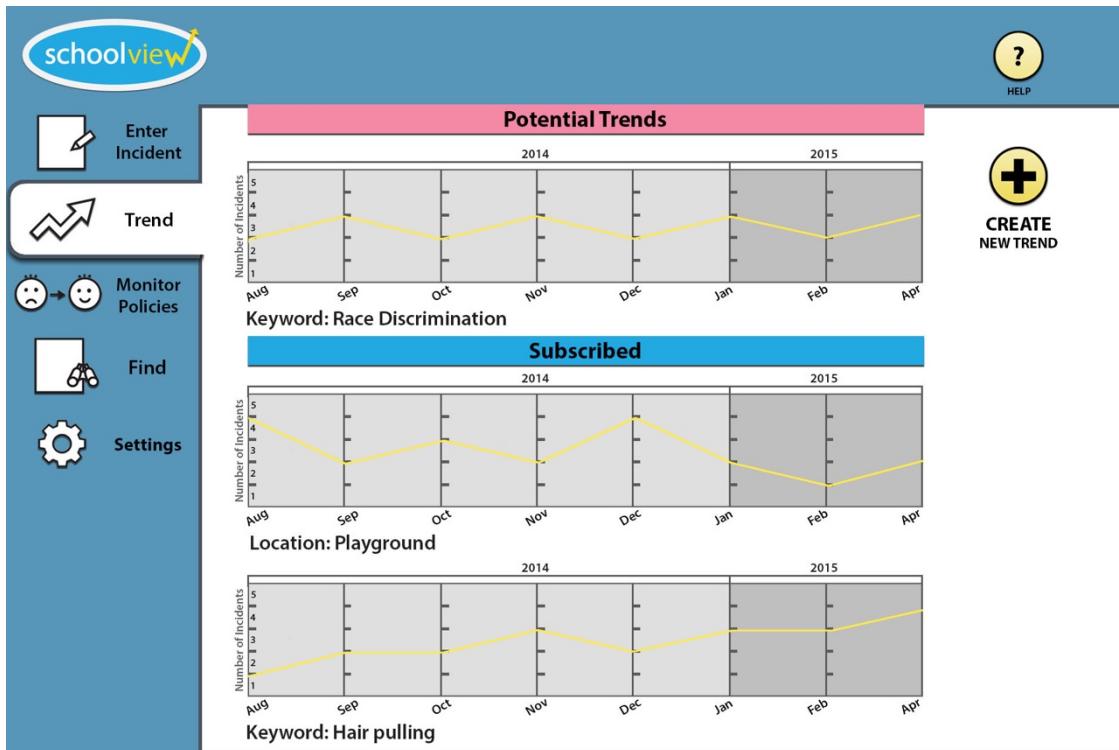
1c. A dialogue box appears informing the user what types of information they can enter.



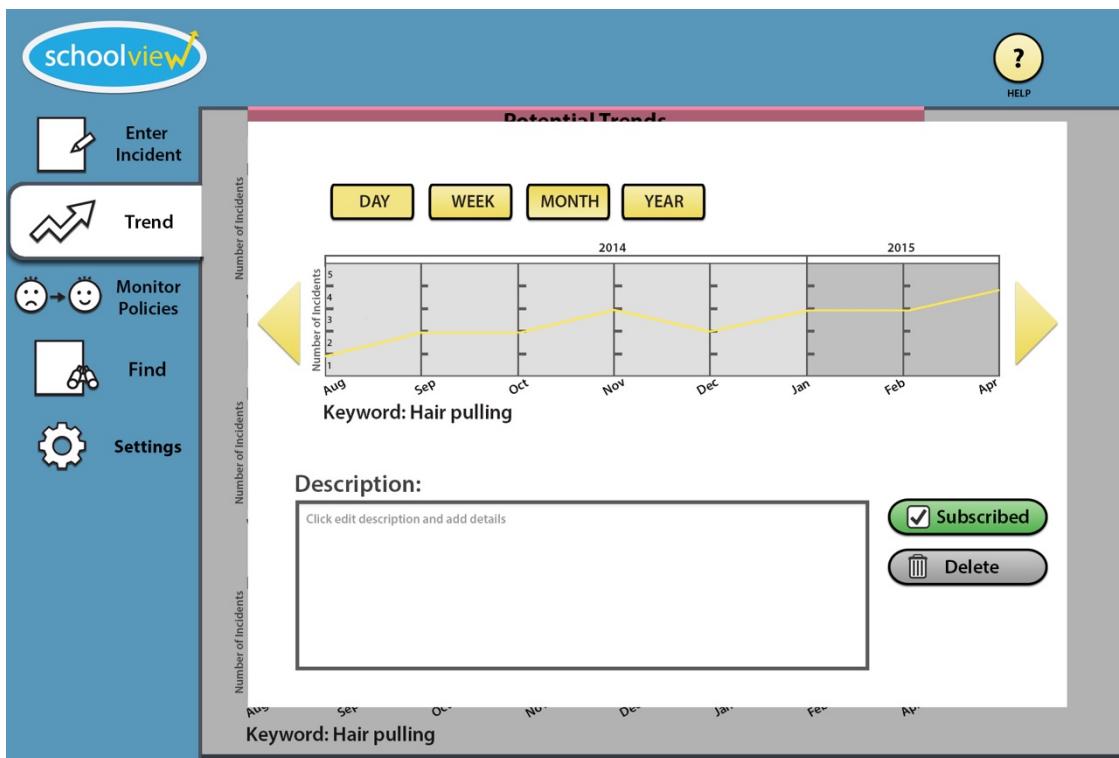
1d. After entering "pulled hair" the system suggests "hair pulling" in an effort to maintain consistency of tagging through a folksonomy system. The user selects the appropriate suggestion.



1e. The initial time period to view by is chosen to be months. This can be changed later also. The user then clicks on "Create".

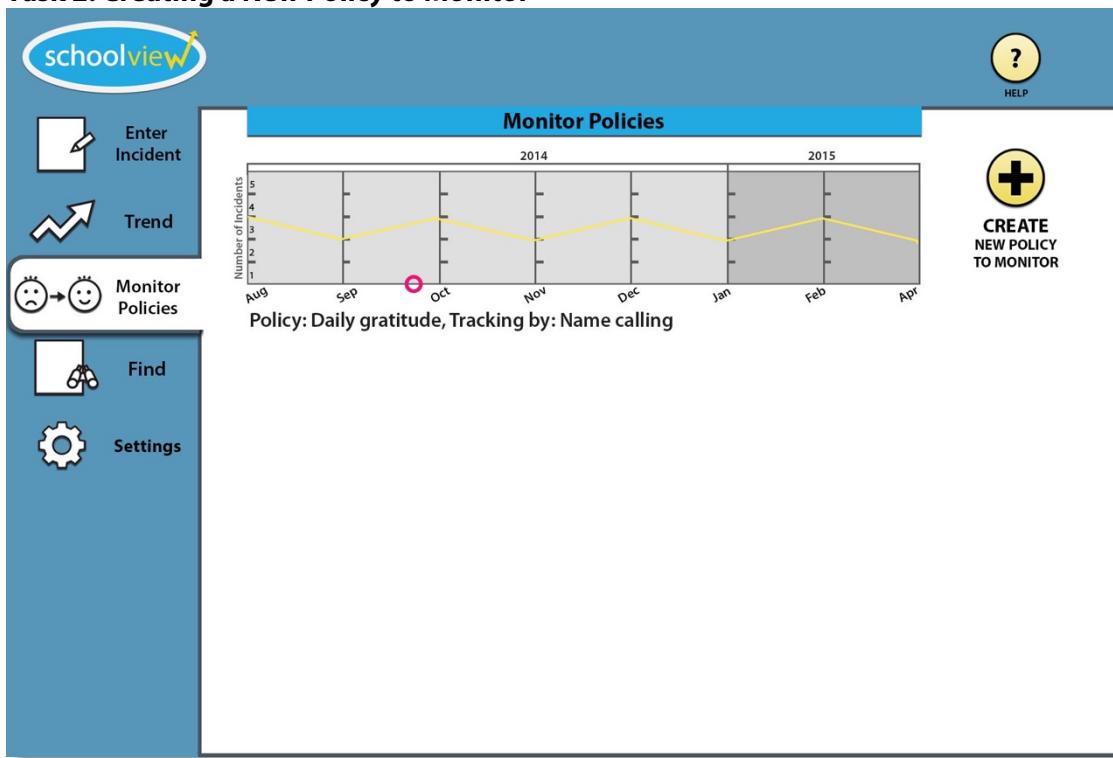


1f. The trend is added to the "subscribed" section. They can now see the frequency of occurrence over a period of time.

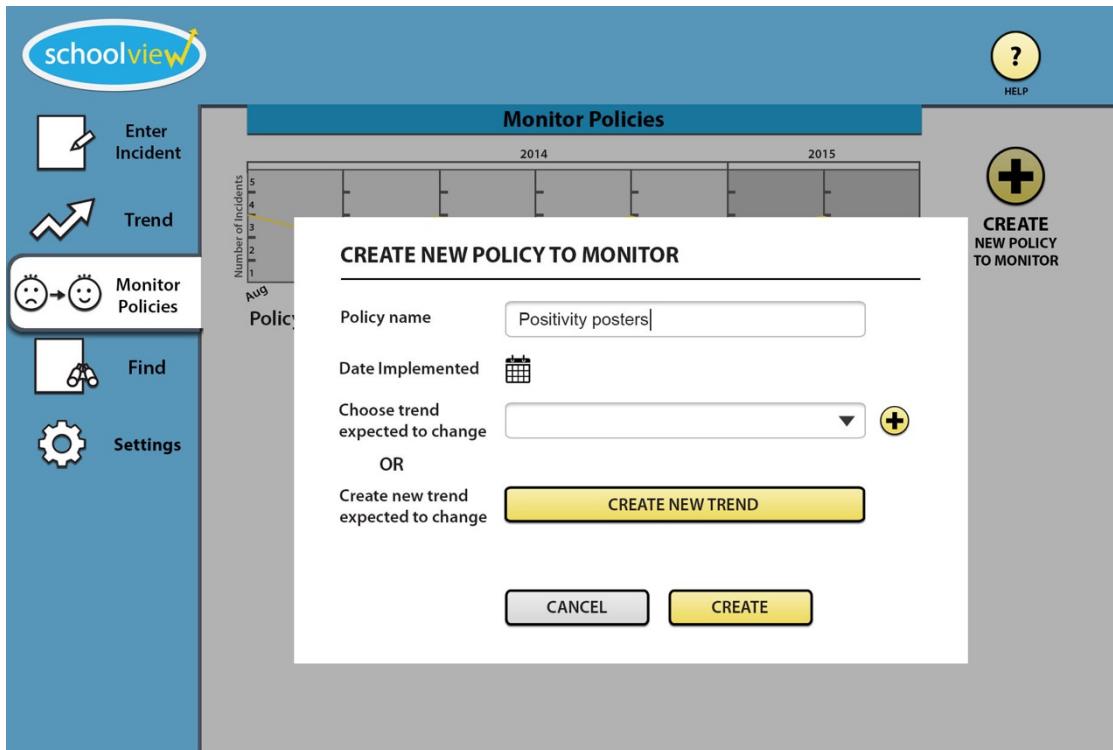


1g. The user clicks the graph which expands to show more details and options about the trend. They can move forwards and backwards in time, change view by day, week, month and year and add notes.

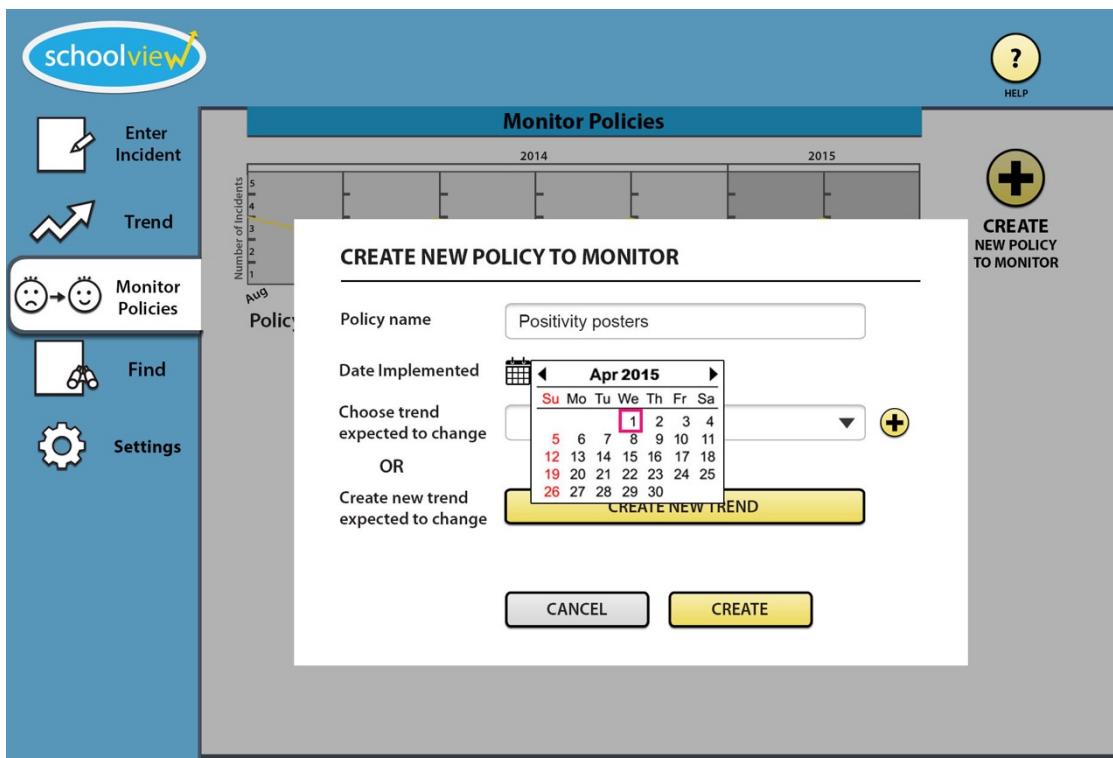
Task 2: Creating a New Policy to Monitor



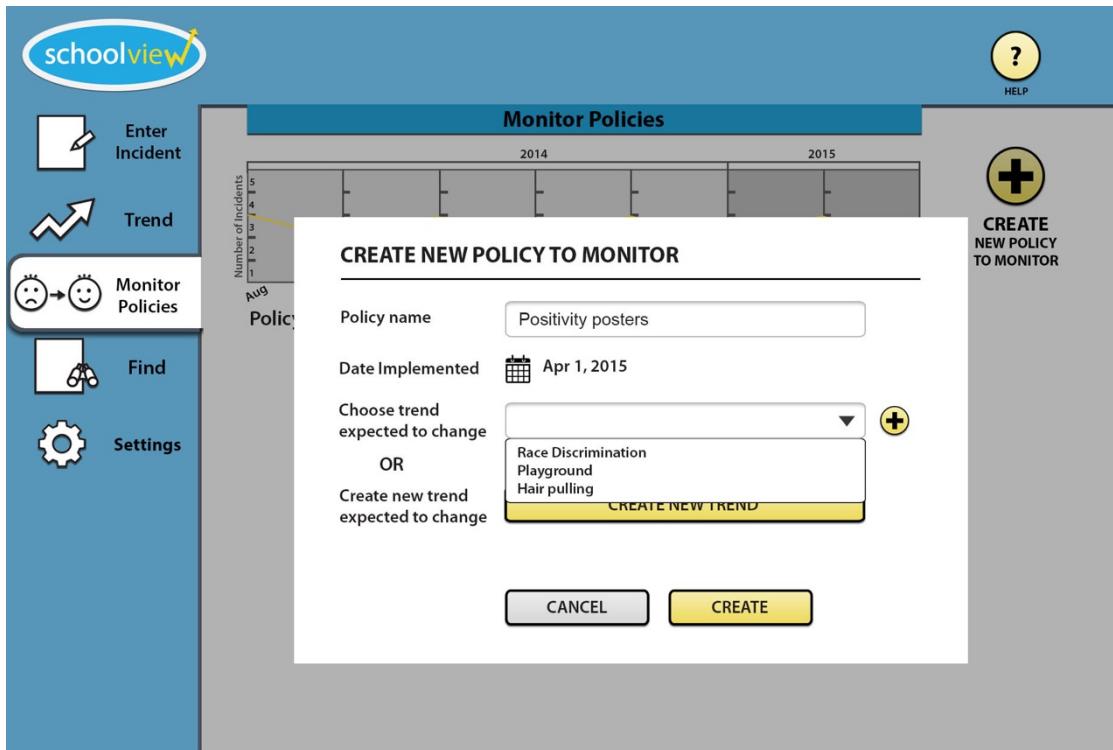
2a. The user begins the creation process by clicking "create new policy to monitor".



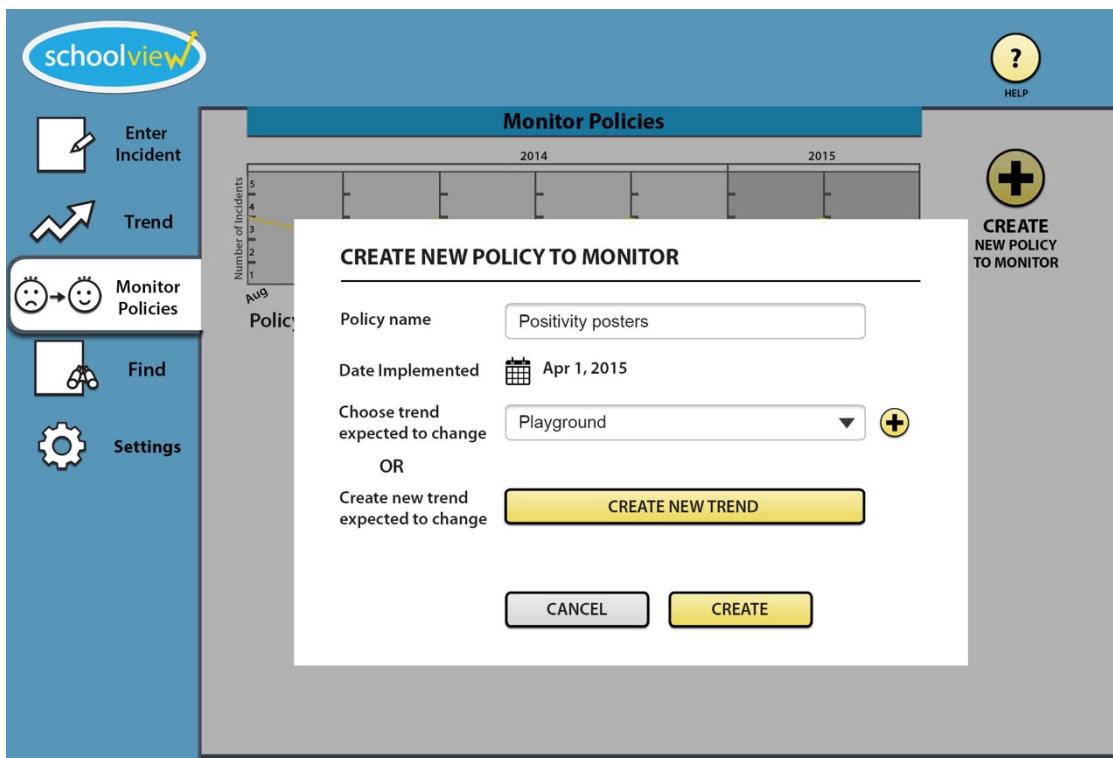
2b. The user begins the creation process by clicking "create new policy to monitor".



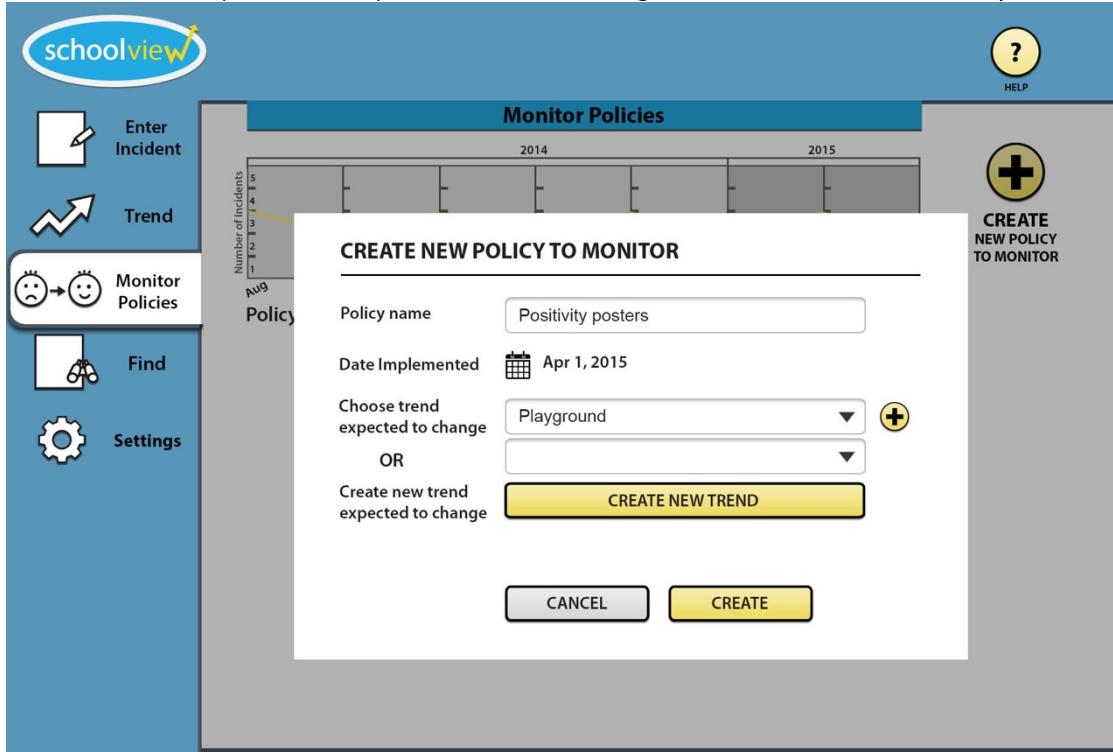
2c. To specify the date the policy began, the user selects the date entry box which expands into a calendar. They click April 1st, 2015 to confirm.



2d. The user chooses the existing “playground” trend which they expected to change to monitor.



2e. The user then presses the “plus” button on the right to add a second trend they wish to monitor.



2f. Another trend selection box appears underneath the first.

schoolview

Enter Incident

Trend

Monitor Policies

Find

Settings

?

HELP

Monitor Policies

2014 2015

Number of Incidents

CREATE NEW POLICY TO MONITOR

Policy name: Positivity posters

Date Implemented: April 1, 2015

Choose trend expected to change:

- Playground
- Race Discrimination

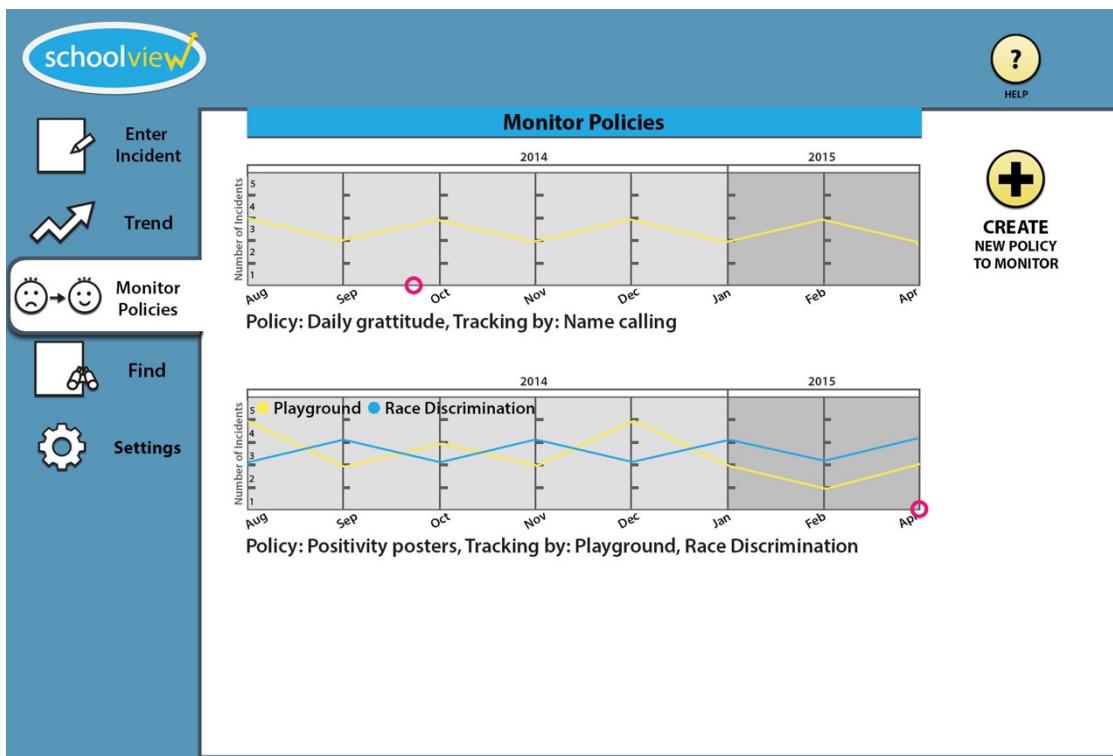
OR

Create new trend expected to change:

CREATE NEW TREND

CANCEL **CREATE**

2h. They choose “race discrimination” as the second trend to track and click create.



2i. Now the graph is added to the “Monitor Policies” view with the start date indicated in pink.

Discussion

The design process was rewarding but challenging. Our team agreed that not becoming too invested in the first or second design that one makes is easy in theory but quite difficult in practice. It was useful not having a high fidelity design from the very beginning in that it diminished our attachment to our current design and made us much more eager to listen the feedback of our evaluators and improve things that were not working. Every problem we encountered allowed us to revise and present to another participant, making other issues more obvious.

The iterative design process helped us see design challenges early on when the stakes are low. Requesting feedback from multiple individuals, each with their own preferences and experiences, gave us a diverse set of design challenges to overcome. Further, testing our design as we finessed all the details made us realize the most important thing about design: usability is judged by how well the people who use this tool actually use the design and how they feel during the process and not just aesthetic principles. This mean, for example, difficulties our usability testing participants encountered make us rethink our organization and clear and consistent labelling.

Our tasks remained the same: investigating potential trends and tracking policy changes. The nuances were altered along the way, however. For example, one heuristic investigator described how they would like to track the effects of a policy change on multiple trends at once. Additionally, the presentation of options in the creation screens for both tasks changed quite a bit due to misinterpretation of the meaning of some functions. The biggest boon to usability we saw was adding the tutorial in the beginning of program use.

The number of iterations upon our design was a good balance between time expended and quality of the final product. Any further iterations would have produced minimal improvements, as we saw from the diminishing number of errors and design problems we heard about from our testing participants as we continued to improve our design test after test. We feel that our design would benefit from more field related studies rather than continued usability tests.