

Business Situation

Project Scope

The papers are abuzz with horrific incidents that are a consequence of children becoming wayward and publicly flouting rules. What if there was a system which would alert the parents the very day the child started disrespecting rules. And would it not be a great reckoning system if the teacher had a list of the activities of the student and take corrective measures at the earliest before the child goes out of control. This was the idea our clients came up with when they approached us to make a Student Behavior Tracking Application that would connect all the people who are responsible for a child's future: parents, teachers and the school.

While the technical details will come up later in this case study, the social ramifications that such an application could have are immense. Having parents virtually sit in their child's classroom and observe his/her activities, allowing teachers to submit behavior rating for students on the spot could help shape and mould the lives of all the students and eventually make them good citizens.

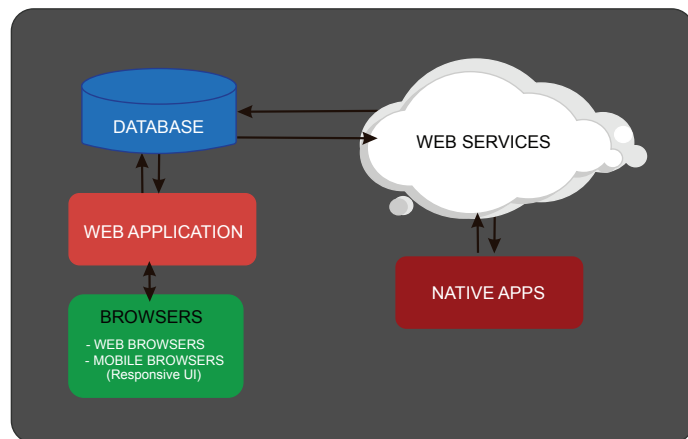
Executive Summary

Our client who operates in the Education Industry as an educator approached us to design and implement a student behavior tracking application that offers a faster way to grade students, a smarter way to manage school and very secure system to manage and keep all the records.

This application involves interaction between a number of players viz. the Principal, Teachers and Parents. It allows the parents to virtually "sit in the classroom" and keep track of their children's behavior. Not only were the parents and school authorities aware of the child's activities, it was also being documented on a district level as well.

Mindfire Solutions helped develop this innovative application which allows the teachers and parents to use their logins to view reports across the globe and with specific drill downs.

The users can access this application through devices of varying screen sizes and in order to make this possible Mindfire Solutions implemented a web browser based interface and used responsive design to ensure that the user interface adapts perfectly to the different screen sizes. Our developers also built the Android and iOS versions to cater to the users mobile operating systems.



About our client:

Client: Educator

Location: USA

Industry: Education

Technologies Used:

PHP, CodeIgniter, MySQL, JavaScript, jQuery, HTML5, CSS, AJAX, REST, XML



Image 1: The screenshot is the image of the district dashboard that keeps an account of student behavior across schools in a district level.



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The Mindfire Solution:

Mindfire Solutions is a firm believer in the Agile Methodology. In order to keep a transparent reporting system and the client cognizant of all the developments; we followed strict practices of scrum with the developers and the product owner (client) participating in a daily sprint stand up meeting daily which would last for 15 minutes. In these meetings detailed discussions were carried out with respect to the work that has been accomplished thus far, as well as the work that yet remains.

The application designed by Mindfire Solutions has a central Admin who can create schools and import students' and teachers' data. It can be used at a district level where by student activities of all the schools can be tracked centrally. Individual schools can be monitored locally by the Principal who acts as a local Admin. The Principal can then assign students and teachers to the respective classes.

We also implemented a native client app which uses robust REST API to allow teachers to submit behavior rating for students on the spot. This enables the parents and school authorities to see how the student is doing in school. It basically provides a running report on the students conduct to find and take early corrective action.

We also implemented a web browser based interface and used responsive design to ensure that the user interface adapts to different screen sizes. Teachers and parents can both use their logins to view reports across the globe and with specific drilldowns.

Details of the features provided to the users:

The following is a list of the broad user types who can use this application along with the various functionalities that are allowed to them:

Central Admin:

The Central Admin can be an authority who can monitor student activities across various schools and take corrective measures effectively. The central admin has the power to create schools, select teachers and students and assign them to classes accordingly.

The admin is powered with a dashboard (see image top-left) that contains an exhaustive list of schools, teachers, students and activity reporting on a real time basis. Such a dashboard has immense implications in terms of maintaining discipline in a larger scale as it enables the admin to document student behavior effectively.

Principal:

The Principal of the school also acts as a local admin. The Principal can select teachers and students and assign them to the particular classes.

The following are some of the functionalities that are provided to the Principal:

- 1) Display student behaviors for all current classes
- 2) Review attendance and incidents in real time from anywhere
- 3) Display the behavior history of any student.

The functionalities mentioned above help the Principal to work smarter and improve decision making. Using the statistics to identify trends in student behavior they can address the root cause of conduct violations. This enables the Principal to anticipate probable challenges and make necessary adjustments to prevent disruptions which in turn fosters better school administration.



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Teacher:

The Teacher is also a user and a major contributor to this Student Behavior Tracking Application. Once a class is assigned to a teacher, the latter can then use the following functionalities to easily document students' behavior, not only in the classroom but also in the school premises and facilities:

- 1) Document any incident by selecting a behavior violation and supplementing it with a Voice Memo or Note
- 2) Review attendance and incidents in real time of each student in each class from anywhere
- 3) Display the behavior history of any student
- 4) Create behavior reports based on inputs during classes, after school and extra curricular

Thus, the Teacher gets an opportunity to micromanage and keep track of a student's academic progress as well as his/her behavioral traits and improve grading accuracy without having to take back-up of all student data.

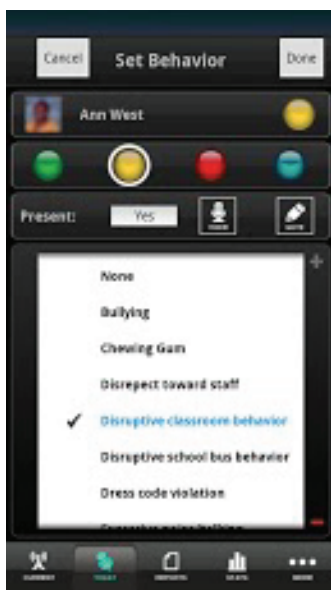


Image 3: The screenshot shows how a teacher can keep an account of student behavior and report the specific type of conduct violation.

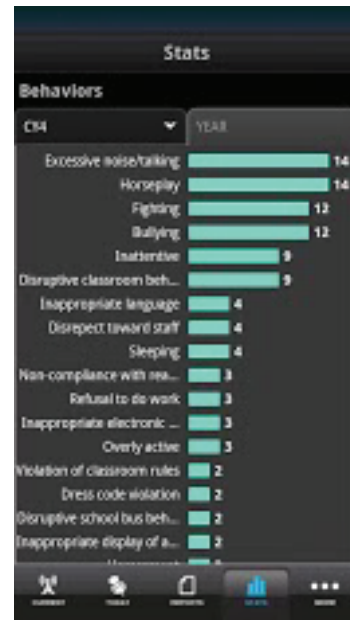


Image 2: The screenshot is the image of the school dashboard which is operated by the Principal to keep an account of student behavior across classes in a particular school.

Parents:

The application has a fourth user category which comprises of the Parents of the students who could be attending the same school or different schools in a particular district. The Parents are offered the following features in order to keep track of the child's conduct at school.

- 1) View the conduct status of their child in real time
- 2) View the behavior history of their child
- 3) Monitor their child's behavior during school activities and events
- 4) Monitor their children's conduct even when they study in different schools

Parents play an equal role in shaping their child's personality. The features offered by this application offer real-time observation as well as a yardstick to gauge their child's behavior as well as academic progress right from the very start of his school career.

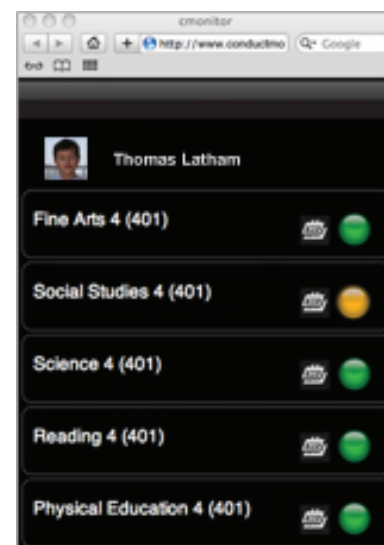
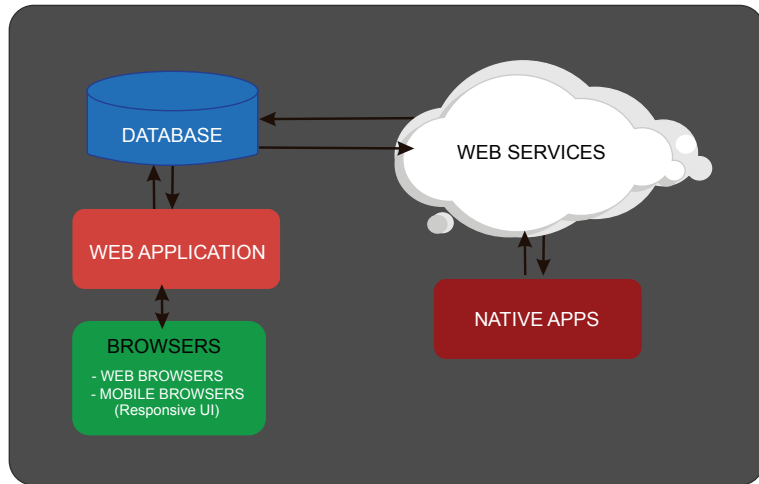


Image 4: The screenshot shows how the parents can view the various activities of their child in each and every subject.



The client's requirement is pictorially represented in the above architecture diagram.

How the Application/System works:

A) Registration: This happens at the beginning of the process. The School Admin has to first register his/her school and then import all data like students, teachers, classes, periods etc. for their school. The teachers and parents also have to register in order to use this application.

B) Manage users: The Admin has the power to manage all the users and assign or change their privileges. For instance, the Admin can give permission to some people to act as the school staff.

C) Manage class and periods: The Admin can manage and schedule all classes and periods as well as create new classes or periods.

D) Manage teachers: The Admin can manage the teachers, add teachers and upload teachers' images.

E) Manage students: In a similar fashion, the Admin can manage students, add students, modify students' data and upload students' images. Also, as the students' now come under the purview of their respective teachers the teachers can update student behavior in a real time manner which will help them assess the students' details both in terms of academic as well as conduct.



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Customer Benefits:

Our skilled PHP developers used the CodeIgniter framework to develop a solution that was implemented on a larger scale across a number of schools country-wide. This solution can also find further use in universities and professional institutions.

Mindfire Solutions suggested the use of responsive design in order to make the application accessible across a number of devices with various screen sizes as per the users' preference.

By making use of using JavaScript, AJAX and HTML5, we also implemented a web browser based interface to enable the user (Principal/Teacher/Parent) access the students' report on the go, without having to install the application on each and every machine that they use. This paved way for cross-platform compatibility.

Real time update of students' behavior was achieved by implementing a native client app that makes ample use of robust REST APIs to generate running report of students' conduct. This feature was highly popular as it served as a memory aid for the teachers for annual student grading process.

Future Relationship:

The project started off on a very professional note where the client was included in all the stages of software development. This ensured that there was transparency and clear communication between both the sides. Our skilled CodeIgniter developers wowed the client with their in-depth technical knowledge and attention to the minutest details.

This resulted in a very satisfying work experience. It also solidified client's faith in Mindfire Solutions which resulted in handing over some other projects to us besides considering us for any future enhancements in this application.



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Need help with CodeIgniter?

About us

Mindfire Solutions is a 13 years old leading Software Development and IT services company with a strong track record of working with small and mid-size clients in US, Europe, and Asia-Pacific. With more than 750 spirited software engineers across three advanced development centers, Mindfire has successfully delivered over 1000 projects for its 300+ clients spanning SMBs, ISVs, SaaS, Global 2000, and Fortune 500 firms.