

Motivata

CSE 440 - Contextual Inquiry

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Problem and Solution Overview

The Seattle K-12 school district is fighting an attendance crisis right now. The mayor of Seattle launched a campaign called “Be Here, Get There” to improve K-12 graduation rates.

The reason for this campaign is because in the 2009-2010 school year, only 62% of students met the school district’s attendance goal. In addition, research has shown that students with more than 20 absences per year have less than a one in five chance of graduating high school.

In order to help the school district battle the attendance issue, we propose to enhance the current high school attendance interface by adding tools and analytics that will help with classroom engagement.

Contextual Inquiry Participants

Jamie Burns – Lake Washington Elementary School Teacher

We chose Jamie because of her experience as an elementary school teacher. This makes her a direct stakeholder and user of our application. She loves teaching and is always on the lookout for better tools to help her in the classroom. She wants to get her masters in teaching. Since it wouldn’t have been appropriate to audit a third grade class, we met Jamie in a small classroom at UW. We asked her to demonstrate what it’s like to take attendance, reward and punish participation, and how she makes her classes more exciting. As she went through the motions, we watched and took notes.

Clarence Dancer – Director of MESA

Seattle Mathematics Science Engineering Achievement (MESA) is a K-12 educational program that helps underrepresented students prepare for college mathematics, engineering and science. MESA hosts classes, clubs, after-school programs and summer programs to help students visualize themselves in college and careers in the future. Not only does MESA focus on students, they also support teachers and

parents with hands-on programs. By doing all of this, Seattle MESA has helped 96% of their seniors students go to college. We interviewed Clarence J. Dancer, who is the director of Seattle MESA, and Jarman D. Hauser, a 9th grade program leader. We didn't use the master and apprentice model with MESA because they are indirect stakeholders don't interact with the attendance system directly. Instead, we spoke with them at their office. We wanted to work with MESA because they have experience working with various schools in Seattle.

Diana VanAelstyn – Roosevelt High School Attendance Office

Ms. VanAelstyn runs the attendance office at Roosevelt High School. She manages all of the attendance records, interacts with parents when they call to excuse an absence, and refers truant students to the guidance counselor. The reason we chose to interview with a high school attendance office is because we wanted to know exactly how high schools track attendance, what happens when students skip class, and what kinds of features an improved system could have.

Contextual Inquiry Results

Common Themes

- Teachers have their own styles for making classes more exciting.
- Building stronger relationships with students is important for engagement
- ESIS (Seattle school district attendance and grade system) is used.
- The Source (way for parents and students to check their grades from home) is used.

Jamie Burns – Lake Washington Elementary School Teacher

Jamie had a lot of great takeaways for us to explore and improve upon. First of all, she noted that Seattle uses the ESIS system. She seemed to be okay with it and said it had other functions besides attendance such as viewing student images and grades. Marking who is absent by hand is faster and the data is entered into ESIS later that day.

Another important takeaway is that teachers are given freedom within their classrooms to choose how to reward, punish, and engage students. Many teachers use a “token economy” where students are given a few coins at the beginning of class and can get more if they participate or lose them if they are misbehaving. In the end, if there are enough coins in the class, then they might have a party.

The final takeaway is about getting more involvement in class. The first option is to vary the activities in class. For example, in language classes, teachers can handout a worksheet, then sing a song, do role-play, and then finish with some reading. Another option is to elicit competition among students. This puts social pressures on the students to rise to the top of the class. A third option is to put more trust

into students and let them have more voice in class. This is called the Pygmalion effect where by raising your expectations of the students, the students actually rise to meet those expectations.

In the end, though, I think her rationale is that it's all about the teachers trying to build a closer relationship with the students. If you have that relationship, students will want to attend and participate in class.

Clarence Dancer – Director of MESA

One detail we found from interviewing MESA is that the most important element in engaging students is motivation. Students need to believe in education first. Clarence highlighted that kids often ask him, "What's the point?" Students were not able to see how attending a class today can benefit them in the future. In college, kids go to school because they feel the information is valuable to them or an important step in their future since classes relate directly to personal goals. Students don't feel that way in high school. Because of this lack of foresight, 9th and 10th graders have the highest dropout rates.

Clarence also explained that students feel like a number because there is no one-on-one guidance. If a student does not feel needed, he is often is not interested in attending the class. Clarence explained that it's important for students to have a one-on-one connection with their teachers. Parents should also foster this connection.

Clarence also suggested that there are three main categories of students when it comes to attendance: 1. the students that already go to class all the time, 2. the students that skip once in a while, and 3. the students who rarely show up. He said that we should focus on trying to keep the students that are already engaged, as motivated as possible because it's easy to lose focus. In addition, he suggested we try to find innovative ways to motivate the ones that are not attending.

Diana VanAelstyn – Roosevelt High School Attendance Office

After our first interview, we were eager to learn more about the current ESIS system that the Seattle school district uses and how it keeps track of student attendance. The current ESIS system has a fairly functional interface. However, its interface is oddly proportioned in the screen only using the top left corner of the screen.

Ms. VanAelstyn explained everything that happens after teachers input class attendance into ESIS. We observed her system of taking phone calls from parents to excuse an absence, and then marking absences excused in ESIS. She walked us through making mass edits for many days or many students (for events like field trips); looking up attendance records by student, period, or date range; printing the report about which families received automated phone calls due to unexcused absences; printing the daily attendance report of all students; how truant students are identified and what happens to them; differentiating between lateness and absence in the computer; and many more of the details that the attendance office manages. She pointed out that although ESIS is accessible by many parties, it assigns different permission levels. She also explained that for unexcused absences, parents receive automated

phone calls home letting them know, and that they support non-English speaking parents with a bilingual department. Observing her work revealed the scope and magnitude of the features an attendance system must address, and how costly it is to switch to a different system in terms of retraining users.

New Features

Taking into account the complexities of a real-world attendance system and the results from the interviews with MESA, our contextual inquiry revealed flaws in our original idea of an attendance system. Recreating an attendance-tracking system is analogous to reinventing a potentially-worse version of the wheel, and is not an effective tool to increasing student engagement. We decided to extend the existing system instead of replacing it entirely. We propose an engagement-centric web app that uses data pulled from ESIS to provide tools for teachers to measure, compare, and increase engagement.

Data Visualization Tools

We will provide visualization of students' attendance and grades over time and similar visualizations for aggregated national data. Teachers may choose to input participation for each student to visualize over time as well. Students' whose absences or grades put them at risk for truancy or academic probation will be differentiated (perhaps a different color).

Communication Tools

We will provide communication tools so teachers can send students and parents text or email alerts. Positive reinforcement alerts praise students for good work, or say they were missed if absent. Reminder alerts can be used to let, for example, students who have been out sick know that important due dates are coming up. Relevancy alerts share what topics are coming up, and point out an interesting, real-world application. These communications will increase student engagement by helping create a positive environment and connect lessons to the real world. We will also display a random fact or joke that teachers can choose to use as a beginning to class each day.

Analysis of Tasks

Existing Tasks

Observing and interviewing the Roosevelt attendance office revealed many more details and scenarios in attendance-tracking than we had previously considered. These intricacies include tracking absences, confirming excused absences with parents, recording reasons for absence, working with non-english speakers, tracking absences by period, making changes for groups of students, differentiating between lateness and absence, reporting which parents were called for unexcused absences, and reporting truant students to counselors and the district.

The current ESIS system handles all of these tasks, as well as grades and other information. It also assigns permissions to the different people using the system according to which tasks they should be able to perform. For example, only the attendance office can excuse absences and only teachers can change grades. ESIS is already in place throughout all Seattle schools and, despite a few limitations and usability problems, it is functional.

Improved Tasks

The following tasks will be supported by our application.

Easy

Look at the overview for a single student.

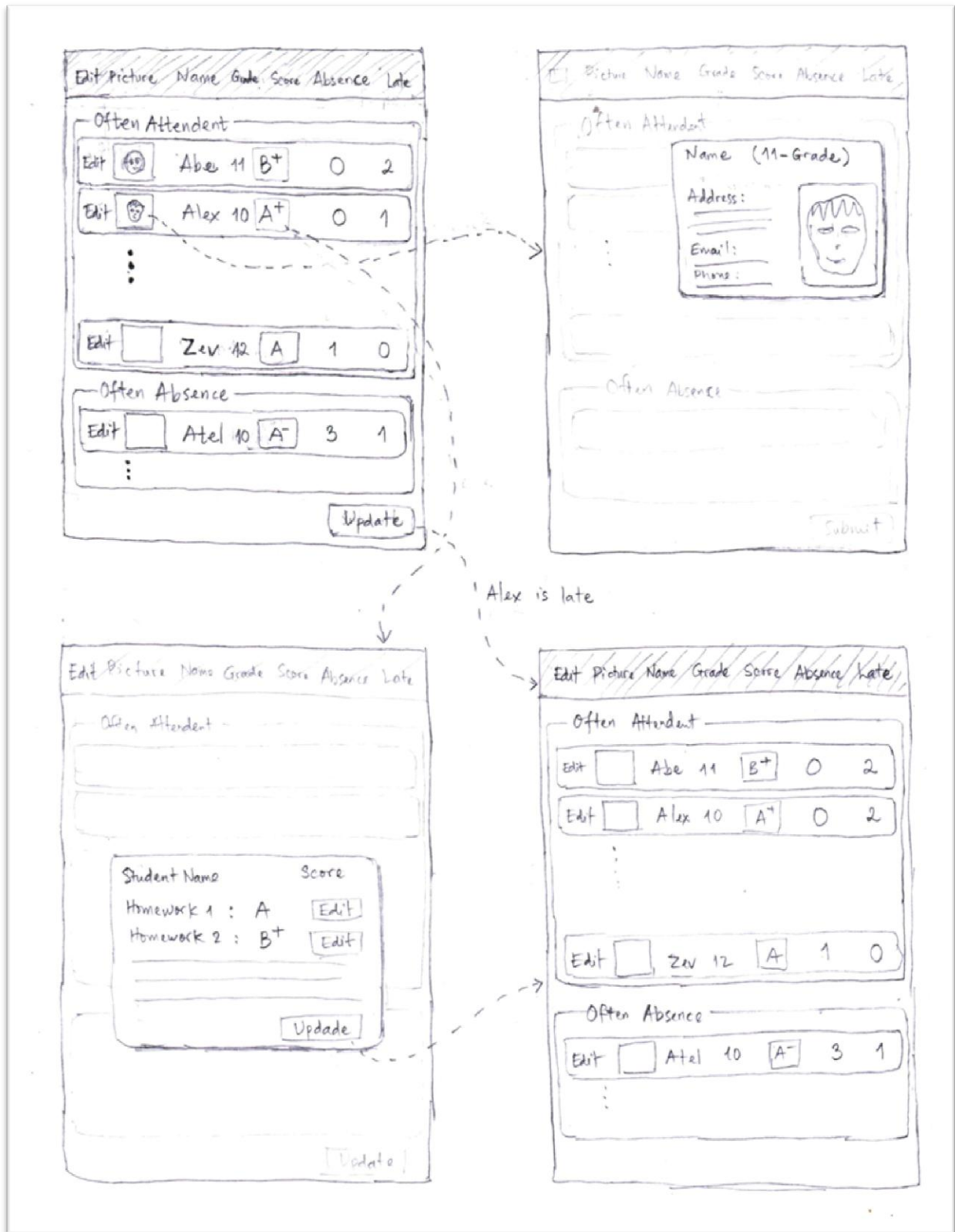
Medium

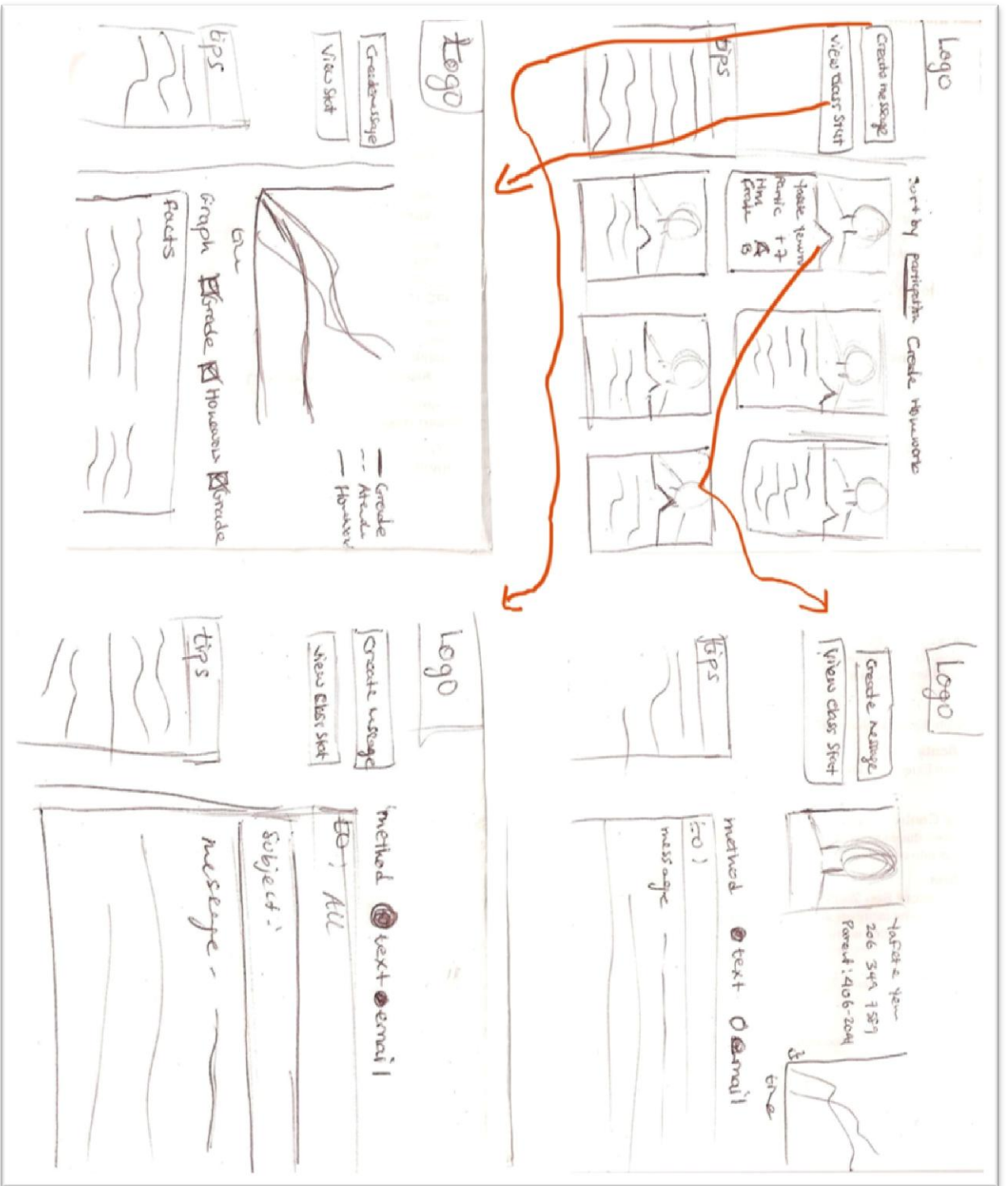
- Send a student a message saying “You did a great job answering that question. I appreciate your hard work!”
- Send a message to parents saying “Your daughter did a wonderful job participating in class today!”
- View class trends compared to national data averages.

Hard

Alert all the students the day before class to tell them about which topic will be taught in class.

Sketches





Motivator

Login

Motivator

User

Role

Password

(was student, parent, officer)

Info

Student

Nice job today!

(injury) ↗

Landing

Classes

Analytics

Tools

Options

"Be great"

Student

Student

student

Attendance Participation Grade

A-

A

B+

B-

Tools

Classes

Analytics

Tools

Options

Puzzle of the day

On this day in...

Choose raffle winner