

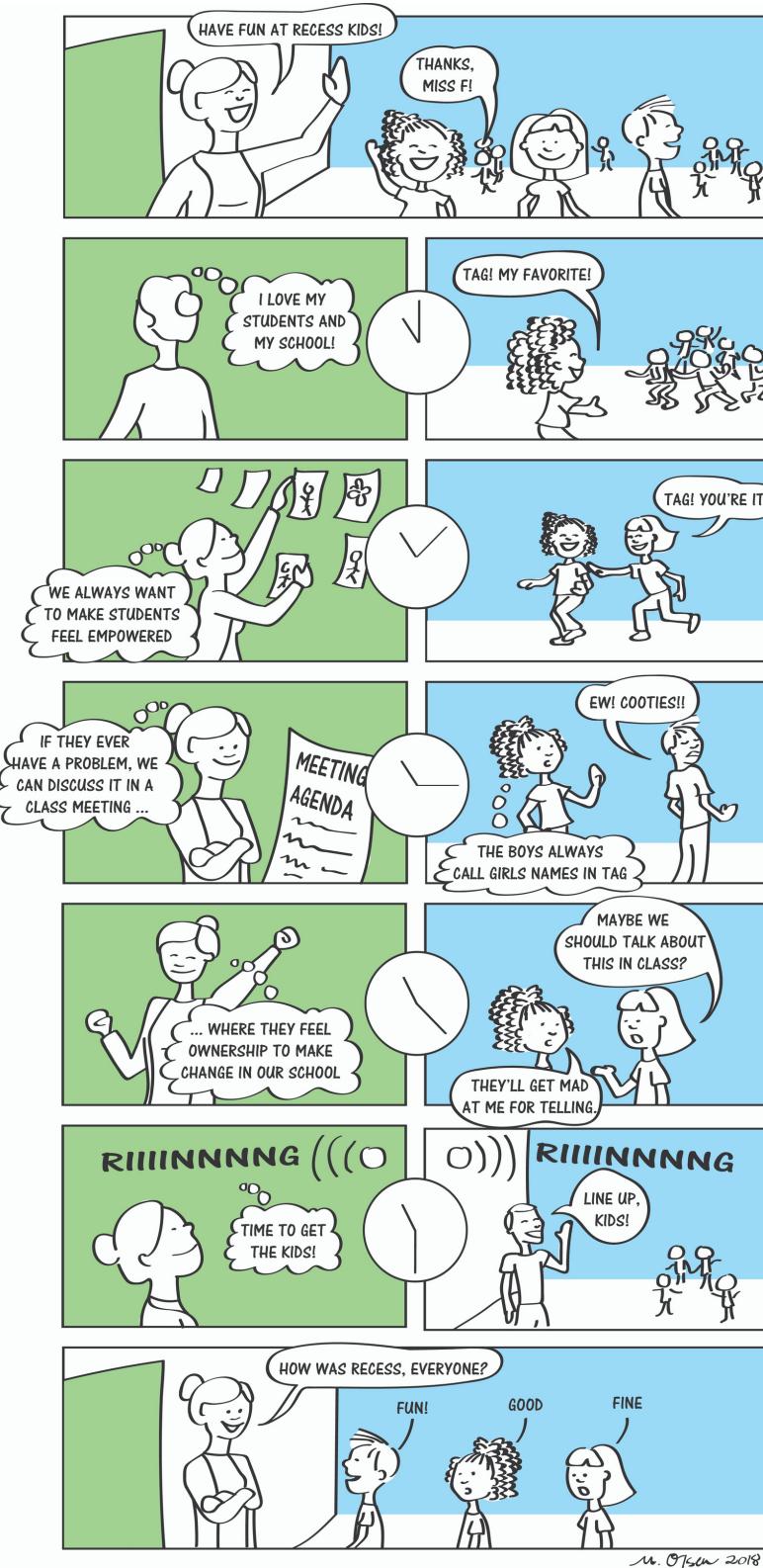
THE FLAPPY BAND

IMPROVING STUDENT AND TEACHER
COMMUNICATION OUTSIDE THE CLASSROOM

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PROBLEM SPACE



DESIGN QUESTION

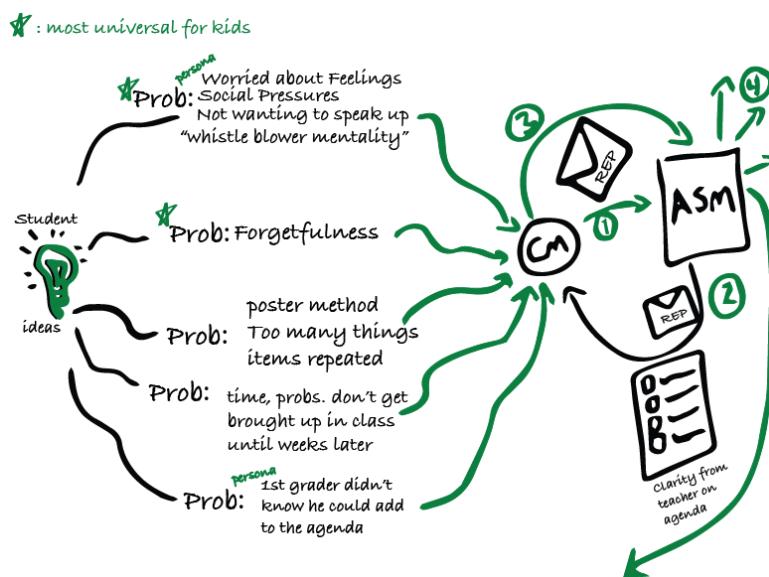


BACKGROUND INFORMATION

University Child Development School (UCDS), an elementary school in Seattle, has a unique **Student Government** system that has been implemented and refined for several years. The teachers and administrators at this school wanted to provide a platform that empowered students to make change within their school community and practice leadership skills to make students ideas and concerns heard. The students can actually change rules, alter the schedule, and make other effects to the school community within reason through the process outlined below. The student government system includes student-lead **Class Meetings** where the children come up with the discussion points and add them to the **Class Meeting Agenda**.

PROCESS OF STUDENT-INITIATED RULE CHANGES

The current system to discuss student-initiated ideas starts with our problem space: adding an individual's idea or announcement to the Class Agenda. Class Meetings (**CM**) are times when students discuss their ideas. **1:** Class Representatives (**REP**) bring larger ideas to the All School Meeting (**ASM**) and discuss. **2:** All School Reps bring ASM items back to CM for voting. **3:** Vote tallies are brought back to the ASM for final count and **4:** Rules/changes are created for the entire school community accordingly.



USER RESEARCH

Methods: We used the Rapid Ethnography research technique to observe students on the playground and in their Class Meetings. We also conducted interviews with students and sent a survey out to teachers (see Appendix).

Findings: Our research found that students were not able to effectively voice their ideas and add them to the Class Meeting Agenda when they were outside the classroom whether in the playground, cafeteria, or hallways.



Reasons students were not contributing their ideas:

1

FORGETFULNESS

If a student thought of an idea or issue outside of the classroom, students had difficulties remembering to bring it back to their teacher to potentially have added to the Agenda.

2

LIMITED WRITING ABILITIES

Items are added to the Agenda by writing a word or phase that briefly describes the concern. Some students in 1st and 2nd grade have difficulty expressing themselves in this way.

3

SOCIAL PRESSURE

Some students may not voice their issues if it could affect their social standing in some way. The concerns lie in being seen reporting the issue, having their name “attached” to the Agenda Item, or getting their peers in trouble.

PERSONA 1



SHY SAMMY

PROFILE

AGE 7
OCCUPATION 1st Grader
TIER Primary Persona
ARCHETYPE The Shy One

QUOTES

"My friend was saying curse words at lunch that I didn't like. I didn't want to add it to the Class Meeting Agenda though, because I didn't want him to get mad at me."

GOALS

- Wants all areas of the school to be a safe and enjoyable place to be.
- Wants to be able to discreetly (and anonymously) notify the school if there are aspects of the community causing discomfort or unfairness.
- Wants his ideas heard without the eyes of the crowd on him.
- Wants to better understand how ideas are added to the Classroom Meeting Agenda and greater community.

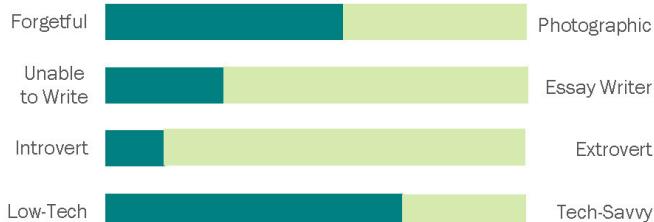
FRUSTRATIONS

- Friends or acquaintances will be upset if he tattles on them.
- Has troubling writing items on the Class Meeting Agenda.
- During the class meetings, can only give his opinion in a public way.

BIO

Sammy can often be found looking at picture books with one or two friends in the reading nook. He enjoys playing some group games after he has observed the game first and learned the rules. He is working on sharing his ideas and questions within larger group discussions. The teacher often helps when he has a problem, especially when working and playing with his peers.

ATTRIBUTES



PERSONA 2



TAMMY THE TEACH

PROFILE

AGE 37
OCCUPATION 1st / 2nd Teacher
TIER Moderator
ARCHETYPE The Empowerer

QUOTES

"Instead of thinking 'Life isn't fair' when students have a problem, we want students to take their problem and try to advocate for change."

GOALS

- Wants students to feel ownership over their school community.
- Wants to provide a platform to empower students to make change in their school.
- Wants to reasonably moderate students' ideas for the Class Meeting Agenda to those that affect the community.

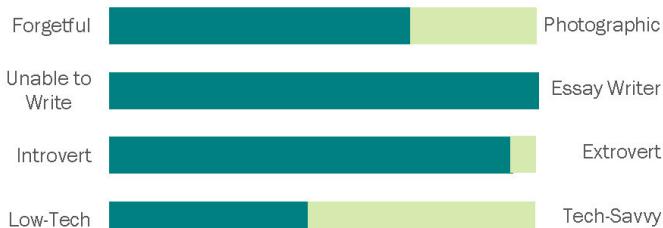
FRUSTRATIONS

- Feels that not all students feel empowered to make change in the school.
- Has difficulty in helping students understand what ideas affect the community rather than just the individual student.
- Feels that the time it takes for students' problems to be heard is too long.
- Is unsure of the best avenue to make the Classroom Agenda available to students

BIO

Tammy is an experienced teacher and has had a long-time relationship with her school. She is regularly sought out as a mentor for new teachers and experienced faculty. She is an artist and often incorporates art into her classroom as a way to engage students with skills they are developing. She uses a written planner/calendar to keep appointments but regularly communicates with faculty and staff via email and the online newsletter from the school helps keep her up to date.

ATTRIBUTES



PERSONA 3



ROSIE THE REP

PROFILE

AGE 8
OCCUPATION 2nd Grader
TIER Stakeholder
ARCHETYPE The Feisty One

QUOTES

"The list of topics on the Agenda is really long... I wrote down Sand Throwing forever ago, but we haven't talked about it yet in the meetings."

GOALS

- Make sure there is an easy and efficient way to have ideas and concerns discussed within the classroom.
- Make positive change democratically-voted by all students to affect the rules of the school community.
- Have more students contributing to the Classroom Meeting.

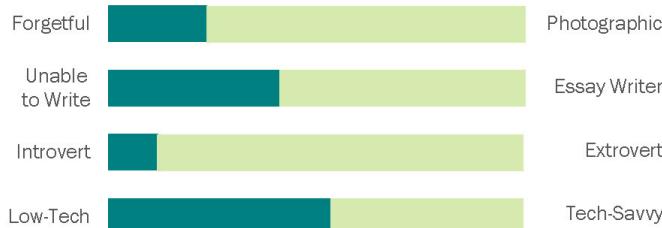
FRUSTRATIONS

- Recognizes problems on the playground, but after going back to the classroom, often forgets to put items on the Class Meeting Agenda.
- Still isn't fully comfortable with writing items on the Class Meeting Agenda or taking meeting notes.
- Once an item is added to the class meeting agenda, is concerned about how it often takes weeks for the idea to be discussed.

BIO

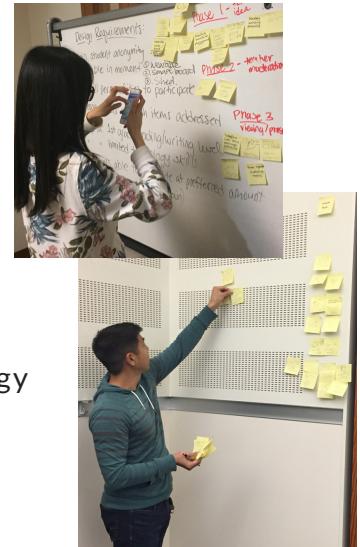
Rosie often helps her classmates with their work and pushes in the chairs as the class is getting ready to leave the room. She has been a representative for her class for a few weeks and has enjoyed the responsibility of sharing the class meeting notes in the All-School Meeting. She often needs help recording what is discussed during the meetings and sometimes wishes she could just remember what her class discussed. She enjoys playing with her friends on the playground and always tells teachers when someone gets hurt. Even though she has tons of ideas for making positive changes, she forgets to add them to the Class Meeting Agenda.

FRUSTRATIONS

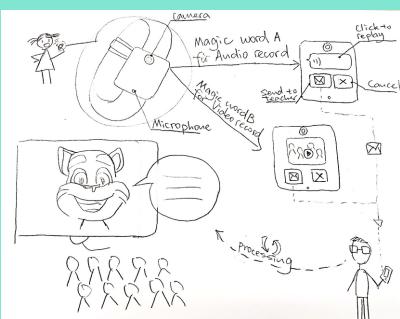


DESIGN REQUIREMENTS

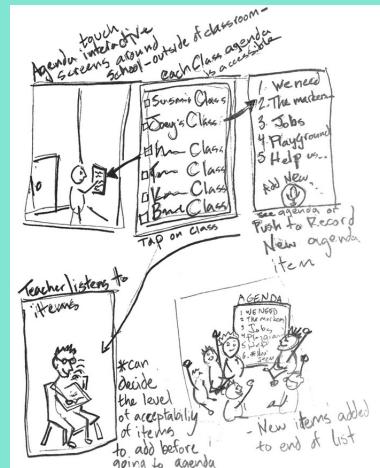
1. Retains student's anonymity
2. Accessible in the moment
3. Allows children with all kinds of personalities to participate
4. Accessible for those of 1st-grade reading and writing level
5. Adaptable to the amount of moderation teachers prefer
6. Fun for students to use
7. Accessible for those with limited understanding of technology
8. Increases the speed at which items are addressed
9. Works in Seattle weather (including rain, wind, etc.)
10. Empowers students to have voice



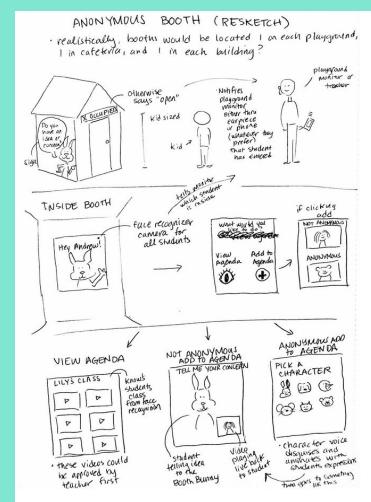
IDEATION & SKETCHING TOP 3 IDEAS



Wearable Watch: Students would use a customized magic word to wake up a watch. It would be able to send a video or audio recording to the teacher's smartphone. The teacher uses the Talking Tom Cat application to record a summary of the students' video or audio message. The Talking Tom Cat would be presented in the Classroom Meetings and work to protect students' anonymity while still being entertaining.



Agendas Everywhere: Digital Touchable Interfaces would be located in multiple places outside the classrooms. Students have the options to record their idea in a voice-to-text form and remain anonymous. The item is sent to the teacher for review. Teachers can adjust settings to how items are reviewed whether digitally or in-person with the student.



Anonymous Booth: Booths would be located at multiple places outside the classrooms. Students register through a face-recognizing camera in the booth. The Booth Bunny would help students add items to the Agenda through video recordings. If students choose to be anonymous, they can pick an animal character that would mimic the students facial expressions during the recording and simultaneously disguise their voice.

EVALUATION OF TOP 3 DESIGNS

S: Addresses Design Requirement in a Strong way.
N: Addresses Design Requirement in a Neutral way.
W: Addresses Design Requirement in a Weak way.

FINAL CHOICE

	Primary Design Requirements						Secondary Design Reqs.			
	1	2	3	4	5	6	7	8	9	10
Wearable Watch	N	S	S	S	N	S	N	N	S	S
SmartBoards Everywhere	N	S	S	N	S	N	N	N	N	S
Anonymous Booth	S	N	S	S	N	S	N	W	S	N

PAPER PROTOTYPING

Our prototype contains two parts: a student wearable which allows the student to send / receive messages to / from their teacher, and a teacher computer interface which allows the teachers to moderate the incoming messages from students. We are focusing on the student to teacher communication.

STUDENT WEARABLE

Students tested a paper watch with an animated cartoon pigeon "Flappy" with which the student can talk to. The pigeon can record the student's idea as a voice message and send it to the teacher.



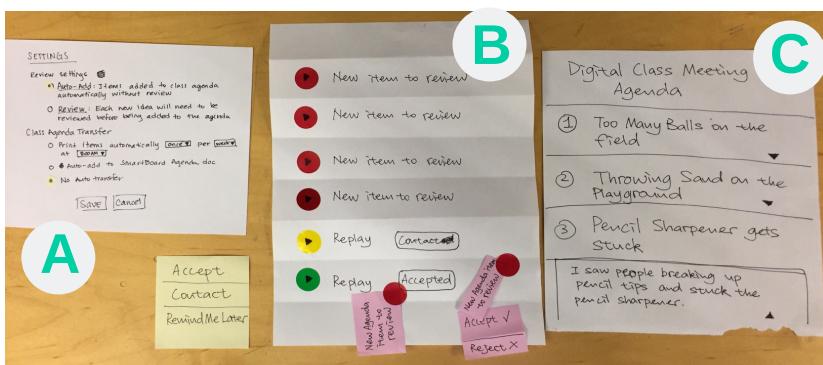
A: Watch to be taped around the student's wrist, with an empty sticky note as the Off screen.

B: A variety of sticky notes with the image of a cartoon pigeon named Flappy. One of the testers acted as the voice of Flappy and added sticky notes to the screen of the watch to emulate an animated pigeon.

C: Sticky notes with a countdown sphere to mimic the timer used when recording the student's voice message.

TEACHER INTERFACE

Computer application that allows teachers to view and take actions upon received messages from students.



A: Settings. Teachers can choose different moderating modes and the process by which student-ideas are added to the Agenda.

B: Inbox. Page that lists voice messages from students. The teacher can mark the messages with a different status.

C: Class Meeting Agenda as visible by the students.

USABILITY TESTING

STUDENT TESTS

PROCEDURES:

- Test three students within the classroom for 20 minutes each.
- Introduction of paper prototype.
- **Task 1:** Set up the watch with preferred name for pigeon.
- **Task 2:** Send message through wristband to be added to the Class Meeting Agenda through teacher.
- Follow-Up Questions.

FINDINGS:

Overall, students considered the watch to be a helpful and fun tool for sending a message to their teacher. Some students had difficulty in remembering how to turn on the watch. One student assumed some of the recording features acted differently than we intended. They all appreciated how fun it was to speak to a cartoon character.



TEACHER TESTS

PROCEDURES:

- Test two teachers within the classroom for 20 minutes each.
- Introduction of paper prototype.
- **Task 1:** Change settings within interface to preferences.
- **Task 2:** Listen to a voice message sent from a student and then add the idea to the Class Meeting Agenda.
- Follow-Up Questions.

FINDINGS:

Teachers felt that additional features should be added to their dashboard for sending messages to the student devices and for viewing the student name and date submitted. Also, students should be able to add their items to the Classroom Agenda after consulting with the teacher in-person and should be reminded to talk with the teacher upon entering the class.

THE FLAPPY BAND

FINAL WEARABLE WATCH

Each student will have their own watch located within the classroom that they put on at the beginning of the day and remove before heading home. The purpose of the watch is to allow for teacher and student communication outside of the classroom. Teachers can send reminders to individual students and students can send messages to their teacher.

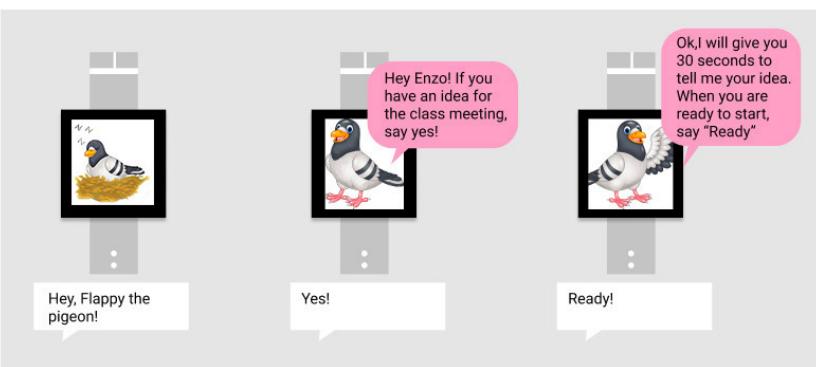
The following wire frame outlines the process by which a student, Enzo, can send an idea to his teacher to potentially add to the Classroom Meeting Agenda through Flappy the Pigeon.

[Video Simulation of The Flappy Band](#)



ITERATION

Sleeping Flappy appears when student lifts wrist. Reminds student to turn on the bird by saying name.

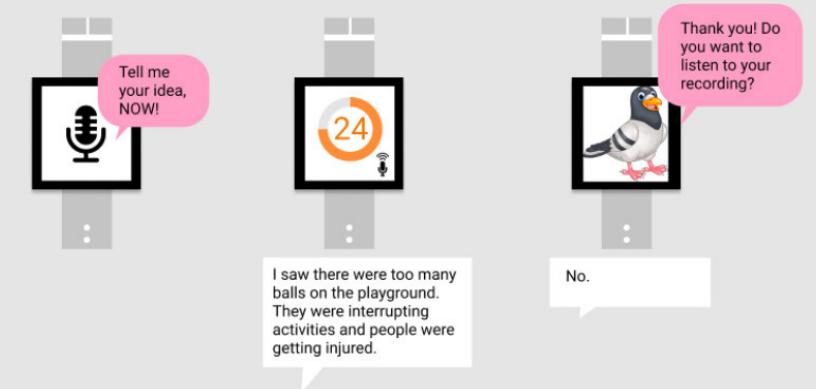


ORIGINAL FEATURE

Flappy is voice-responsive and requires no reading or writing skills.

ITERATION

Microphone icon indicates that the voice of the student is about to be recorded.

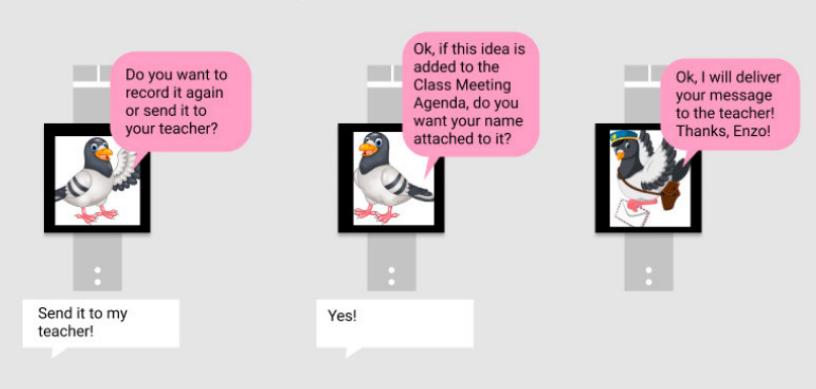


ORIGINAL FEATURE

Student can play back their recording and choose to rerecord.

ORIGINAL FEATURE

Student can choose to send the message anonymously.



ITERATION

When student enters classroom, watch buzzes to remind them to speak with their teacher.

FINAL TEACHER INTERFACE

Each teacher will be given access to a software interface which functions to manage student recordings and send their ideas to the Agenda. This allows teachers to control their degree of involvement with the process but also to encourage students to take more ownership over problems they face that affect the school community. The Class Meeting Agenda can be viewed using the interface as well and can also be displayed in the classroom according to the teacher's preferences.

Interactive Teacher Interface

The screenshot shows two main sections of the teacher interface:

- Latest Messages:**
 - 12/4/18 Johnson, Becky (orange bar)
 - 11/26/18 Anonymous Student (green bar)
 - 11/26/18 Durling, Philip (green bar)
- Approved Class Meeting Agenda Ideas:**
 - 10/14/18 Ellerbee, Chase Rainy day board games (blue bar)
 - 10/16/18 Tromby, Roy Class Pet/Animal (blue bar)

To the left of the interface, there are three callout boxes with arrows pointing to specific features:

- ITERATION**: Includes dates and student name or **Anonymous** if requested by the student.
- ITERATION**: Teachers indicate if they have spoken with a student in person after having listened to their message.
- ITERATION**: Teachers have option to allow students to approve their ideas to give them ownership over approval.

Below the interface, there is another panel titled "Reminders" showing a "Reminder Entry" section where a teacher can type a message like "bring lunchboxes in from recess". It includes fields for "Additional Actions" (Check in with teacher during recess, Check the Agenda when returning to class), "Frequency" (Persistent until dismissed by the teacher), and a "Send" button. A confirmation message "Reminder Sent" is shown at the bottom.

FUTURE DIRECTION

Given additional time and resources, we would develop a full build of the student wearable where the screen would be polarized such that only the student could view it. We would also create additional commands for Flappy that enable the student to interact with the Class Meeting Agenda directly. The back-end system would be developed so that communication between the wearable and teacher could actually occur.

Additional usability testing around the updated teacher interface would be performed to determine its effectiveness. This would help us gauge whether the breakdown of features are logical and beneficial to teachers.

APPENDIX: SURVEY RESULTS

The following charts were results from some of the questions in the [UCDS Teacher Survey](#) that influenced our design decisions. However, quotes and qualitative information gathered in the student interviews informed us more so of the issues they face in having their ideas heard when outside the classroom. These are summarized in *User Research* (page 4).

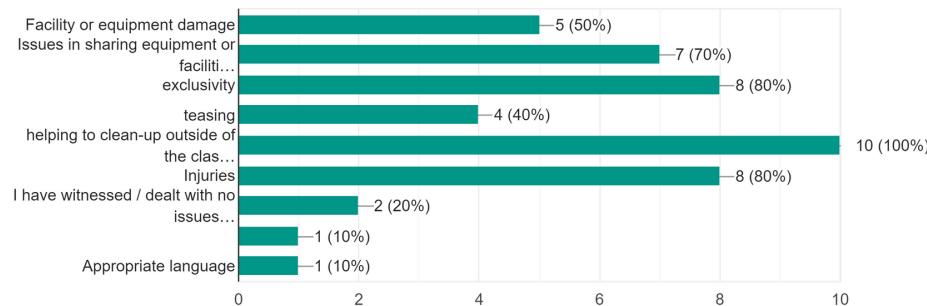
If you have dealt with a problem occurring outside the classroom this year, how did the problem present itself? Select all that apply

10 responses



Outside of your classroom, which of the following issues have you witnessed / dealt with this school year? Select all that apply.

10 responses



Which of the following best applies to how items are added to the class meeting agenda?

10 responses

