

# Spark- Low-fi Prototyping & Usability Testing

Bronson D. - Kevin K. - David A. - Melissa D.

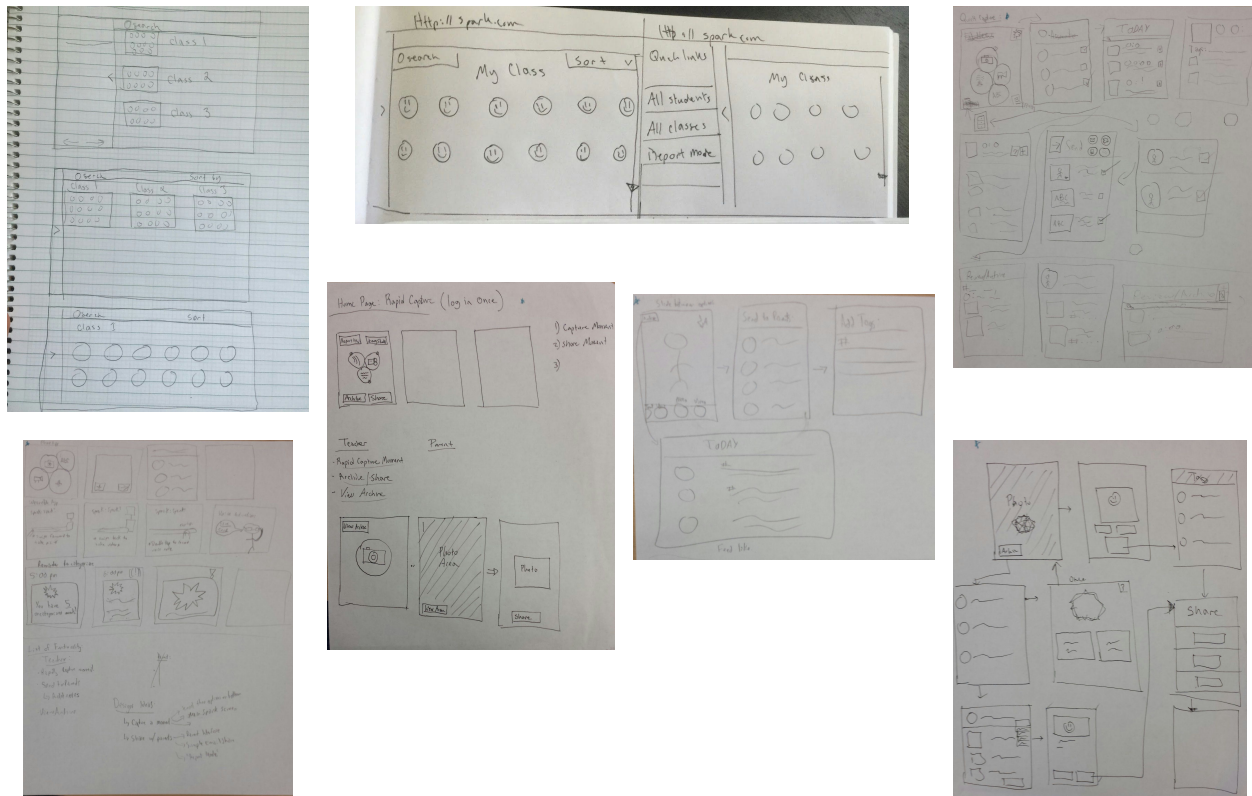
**Spark's Mission** is to further student engagement in education by fostering stronger relationships between students, families, and teachers.

## Problem/Solution Overview:

Scheduling and resource constraints prevent many parents and teachers from working together to support students in their educational development. With communication limited to quarterly conferences, if even that often, both parents and teachers crave ways to collaboratively and effectively track a child's development.

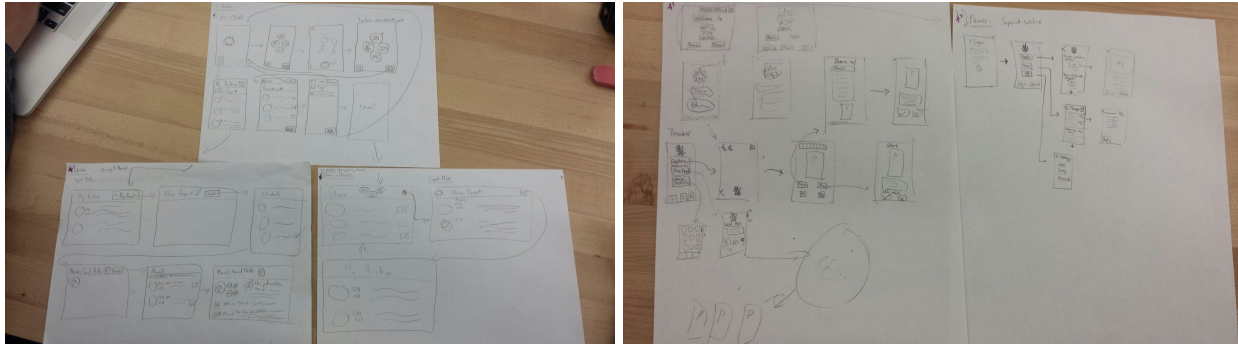
Spark allows teachers and parents to trace the learning progress of each student, and the versatility of Spark allows parents to easily view their child's progress across a variety of platforms.

## Concept Sketches:



\*In order from top left to right: Desktop View 1, Desktop View 2, Mobile Capture View 1, Mobile Capture View 2, Mobile Capture View 3, Mobile Capture View 4, Mobile Capture View 5.

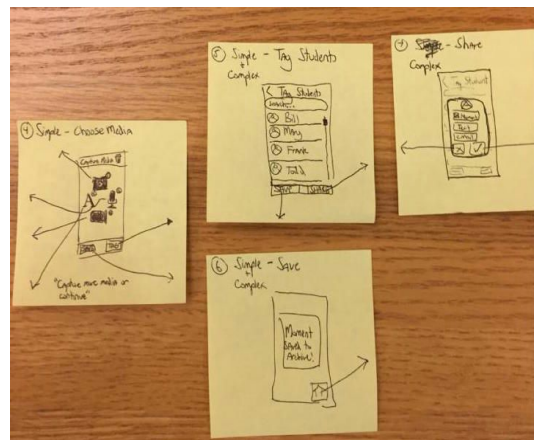
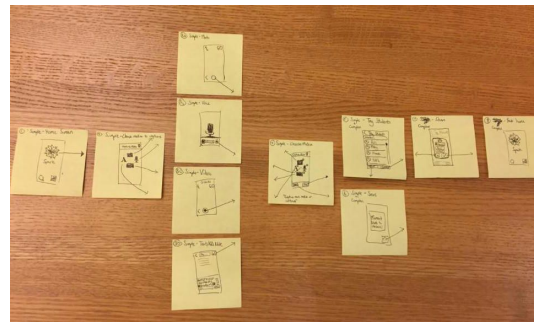
## Top Two Chosen:



## Selected Interface Design:

### Storyboards

We decided to implement our first idea primarily because our other design idea hinged on the existence of both a parent and a student interface. However, through our interviews and prototyping, we realized that parents might not necessarily have access to this app all the time, while most have access to either email or text. Additionally, having only a parent interface to receive memories from the teacher seemed a bit superfluous; having the sharing be done through email/text would simplify things a fair amount. This would also allow us to focus on improving the capturing functionality of the application and enhancing other areas that focused on teacher support, such as “report mode”, instead of investing time on creating a “feed” for parents or other functionality that might not add all that much to the overall project. We also investigated fleshing out the desktop view UI, but decided that the most important UI to test at this point was the mobile capture process.



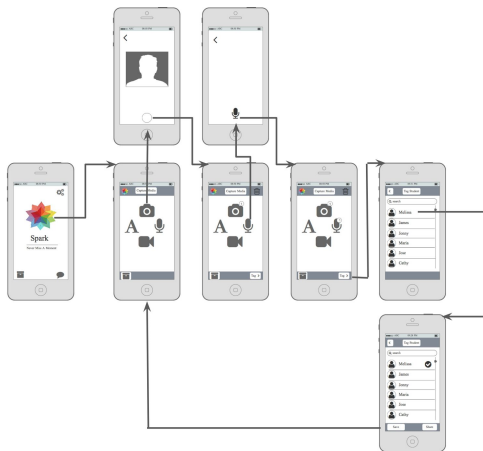
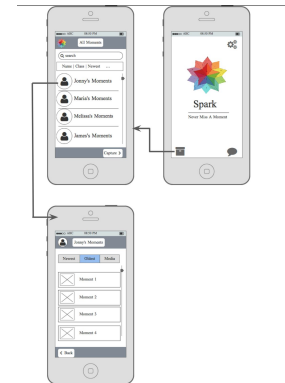
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## Prototype:

Our prototype was constructed using Balsamiq and exported to a PDF viewer iOS application. The PDF simulates the workflow of our app; it contains embedded links that, when pressed, take you to the corresponding page. We chose this prototyping method for testing, as it most closely simulates an organic operation of an iPhone application.

### Simple Task: *View an individual student's moments.*

The user can access all archived moments they've captured via the file system icon. Once pressed, the user sees a list of all their students which they will be able to search & sort as they see fit. If they want to see all the moments associated with a certain student, they click on that student's profile, which takes them to a screen where they can view and sort all of the moments associated with that student. The back button is self explanatory, and the capture button takes the user to the capture function of the app, as described below.

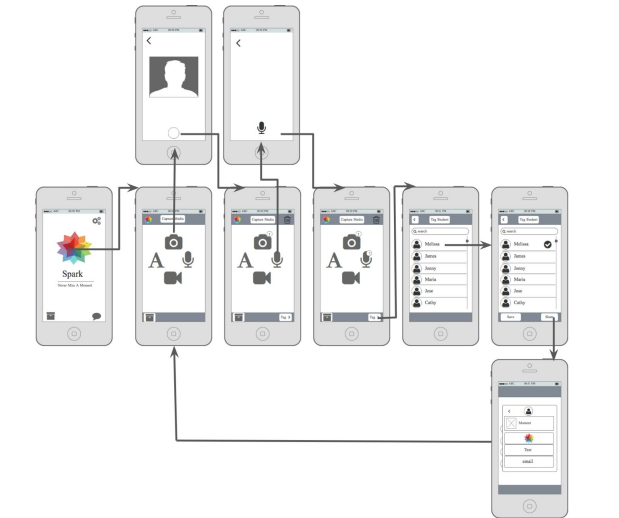


### Medium Task: *Capture and save a moment containing a photo and speech blurb.*

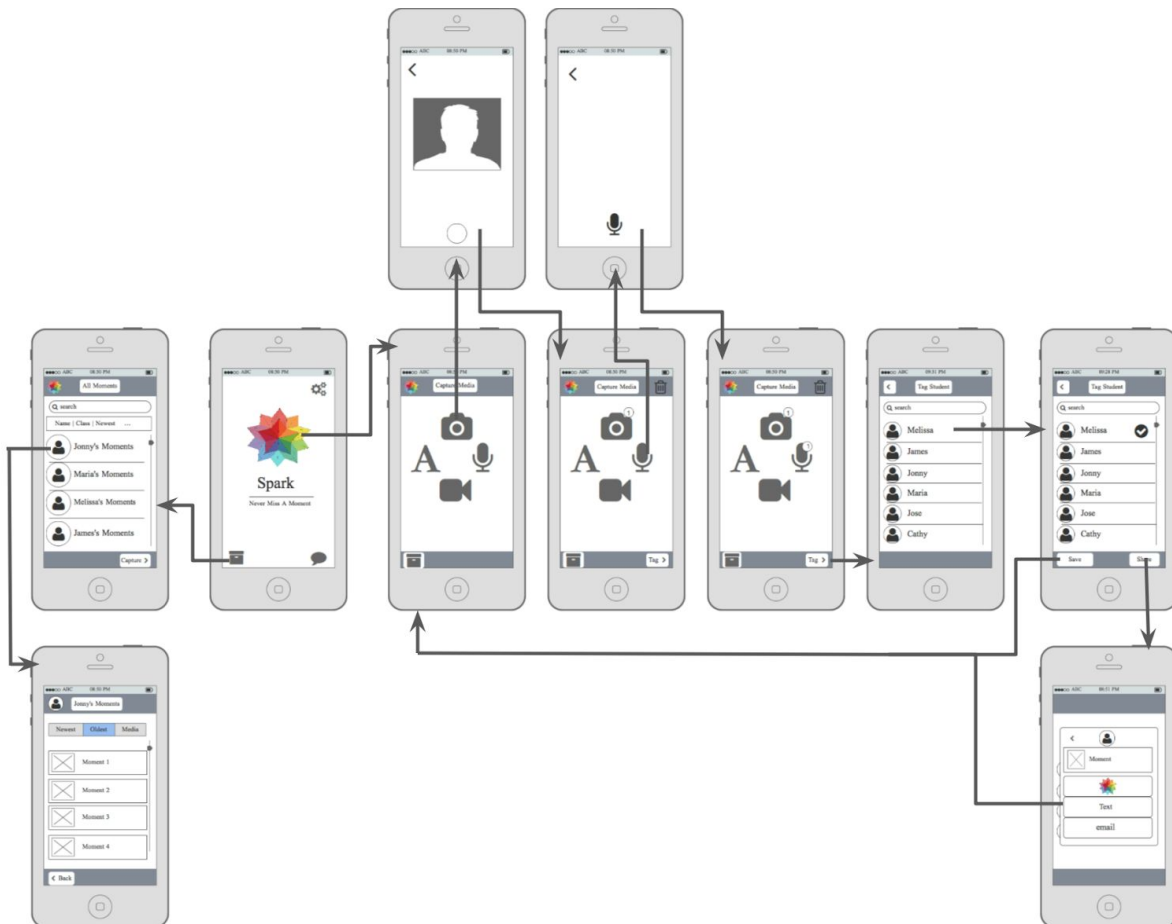
For this task, the user must press the spark logo to enter the capture screen. From the capture screen, the user has the option to input a photo, voice recording, text, or video. After capturing some media, the user is returned to the capture screen, and a small circle to the top right of each icon indicates how many pieces of media of that type are associated with that capture, enabling the user to add as many media pieces as he or she would like to at once. In this case, the user added a photo and then a voice blurb. When the user is done adding the media, he/she then must associate a student with that capture by pressing the tag button. Once the user presses who he/she wants to tag, the options of save and share then become available. The user then presses save and is returned to the capture screen. In all screens the option of trashing the current capture is available. The back buttons are straightforward.

**Complex Task:** *Capture and share a moment containing a photo and speech blurb.*

For this task, everything is exactly the same as the capture and save task, except the user clicks the share button instead of the save button at the post tag screen. The options presented to the user are either Spark, text, or email the moment to the parent of the student. Once pressed, the moment automatically saved and the user is returned to the capture screen.



**Task Flow Overview:**



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**Method:**

Our participants were two pre-k teachers and one kindergarten teacher.

**Participants 1,2:**

Pre-K teachers of 20+/25+ years respectively at Bing Nursery.  
Recruited by walking in and asking.  
Compensated with many heartfelt thank yous.  
Experiment was conducted in the courtyard at Bing Nursery

**Participant 3:**

Pre-k teacher 25+ years from the New Haven Unified School District in Union City.  
Team member's family member's teacher  
Compensated with many heartfelt thank yous.  
Experiment was conducted at the participant's house in Union City

All three participants completed the simple, medium, and complex tasks as described in the previous section. We started by first giving all participants a general description of the application and its capabilities. No specifics were included in this explanation (i.e. press this button to complete this task). Next, one of our teammates demonstrated how to access the capture screen from the home screen and explained how to navigate the embedded links in the PDF. From there, we asked each participant to complete the three tasks. For each participant, we noted the different types of issues (cosmetic, minor, major, or catastrophic) they experienced while operating our prototype.

**Results:**

	Cosmetic	Minor	Major	Catastrophe
Participant 1				
Participant 2				
Participant 3				

Our prototype was generally well received by Participant 1. The cosmetic issue she raised was more of an expression of desire for a certain feature rather than a critique of an existing one. One of the main purposes of this application is to help teachers keep track of students, so Participant 1 wanted a way to see/sort each student by how many moments were associated with that student. This way, Participant 1 felt that she could better see if any students had been “falling through the cracks”. As for the minor usability problem, when the participant was in the process of adding media to the moment, she would often mistake the archive icon for

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the save icon. Thus, to avoid confusion in future interactions, we could remove access to one's archive during the process of creating a moment.

Because Participant 2 was slightly younger than Participant 1, she possibly was more "tech savvy" and had more exposure to using new technologies and applications on her devices. She had no issues completing any of the tasks; however, she expressed a desire to be able to see the number of moments associated with each child.

Participant 3 was admittedly the least tech savvy of the three participants interviewed. At the beginning of the prototyping interview, she stated that learning how to use the application may take her a while, as she was unfamiliar with having to learn new technologies. This warning was important, as it reminded us to keep our design simple and our interface as intuitive as possible. Similarly to Participant 1, Participant 3 struggled when attempting to complete the capture and save task because she kept confusing the archive icon with the save icon, which, in this case, was a major issue. A minor issue that she expressed was her wish for the ability to sort by type of capture (such as math, language, writing, social, or behavioral); when Participant 3 was looking at the archives of all the students, she said that the ability to sort by type of capture would be the greatest help in identifying kids that were struggling in those areas. A cosmetic issue she raised was how she felt overloaded with information she didn't need; there was no need for her (or other teachers) to see all the reports and captures for every student in the grade. Instead, it was more important for her to only be able to view the media captures for the students in her own class.

### **Discussion:**

Overall, our prototype seemed well received by all participants, and we were able to gain additional insights about Spark during our post-testing conversations with them.

First, we realized that the ease and speed of which the capture process occurs is crucial, and it would be absolutely critical for us to associate the correct information with each capture for both organization and recollection purposes. We gained this insight from our conversation with Participant 3, who explained to us how teachers in every class identify students who are severely struggling in certain areas. These teachers then have "interventions" with those students; during these sessions they give the students special help in whatever subject he/she is struggling in. If there were some way to tag moments by subject matter, then the teacher could potentially sort or rank students by subject matter and thus better decide and identify the students that would benefit the most from an intervention.

All three participants expressed a desire for speech to text capabilities. This way, when they wrote their reports about the students, they wouldn't have to re-listen to a previously recorded blurb. Instead, they could just read from or directly paste into the reports they were currently working on. We also spoke to another Pre-K teacher's assistant at Bing who confirmed the need for a more streamlined process for information sharing between teachers. She said that the

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teachers at Bing Nursery currently use Google Drive for communication but all have to spend a lot of time at the end of every day to individually upload, write, and share notes about the students. This process, she noted, was cumbersome and not automatic.

Another idea we discussed with Participant 3 (but which we did not formally test) was a desktop browser view of her students' moments. In terms of creating reports, this view would be the most ideal because of screen real estate.

Word Count: 1837

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## Appendix:

### Script for each Task:

Simple: Easily sort & recollect a child's developmental history for future purposes.

"You are writing a report for parent teacher conferences over a student. You are currently working on Jonny's report. You want to view all the moments that you have captured in Jonny's educational progress thus far."

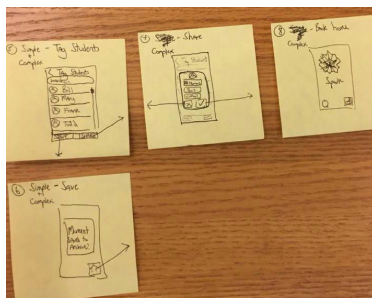
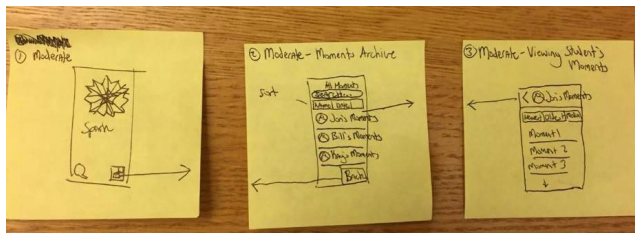
Medium: To capture and save moment in a child's education.

"You see a child, Maria, who has been struggling with math engage with the topic well by using blocks. You want to take a picture of the block set up they have made and take a quick voice note of the fact that they are exhibiting kinetic learning styles."

Complex: Share a child's special moments in their education w/ his/her parents if necessary.

"You want to share Maria's moment with using blocks to her parents. You know her parents prefer communication over email."

### Additional Storyboard Images:





**Consent Form**

The Spark application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of Spark. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers, Bronson, Kevin, Melissa, David or with Professor James Landay, the instructor of CS 147:

James A. Landay  
CS Department  
Stanford University  
650-498-8215  
landay@cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the [TEAM NAME HERE] experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name Adrienne Lomangino  
Participant Number 2  
Date 10/21/15  
Signature Adrienne Lomangino  
Witness name Bronson Duran  
Witness signature [Signature]

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Name Sharon Gregory

Participant Number 3

Date 10/23/15

Signature Sharon Gregory

Witness name Bronson Duvim

Witness signature Bronson Duvim