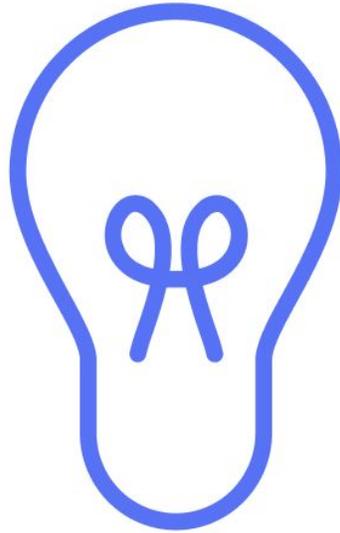


Lessonly



Crowdsourced Lesson Planning and Organization



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Lessonly 2

Problem and Solution Overview

Successful lesson planning can be an arduous and time consuming task which requires resources educators don't always possess. Many educators spend lots of time designing creative and effective lesson plans with no easy way to share them. Lessonly tackles these issues by creating an online community for teachers who want to share, discover, and manage lesson plans. By assisting instructors, and providing them with tools for success, Lessonly aims to have large scale impact on the education sector through positive trickle down effect on their students. When the most creative and engaging lesson plans are accessible to all, students can effectively learn material regardless of their classroom situation. In Figure 1 we have an example of how our product would allow a teacher to search up a lesson plan as well as create, save, and review other lesson plans.

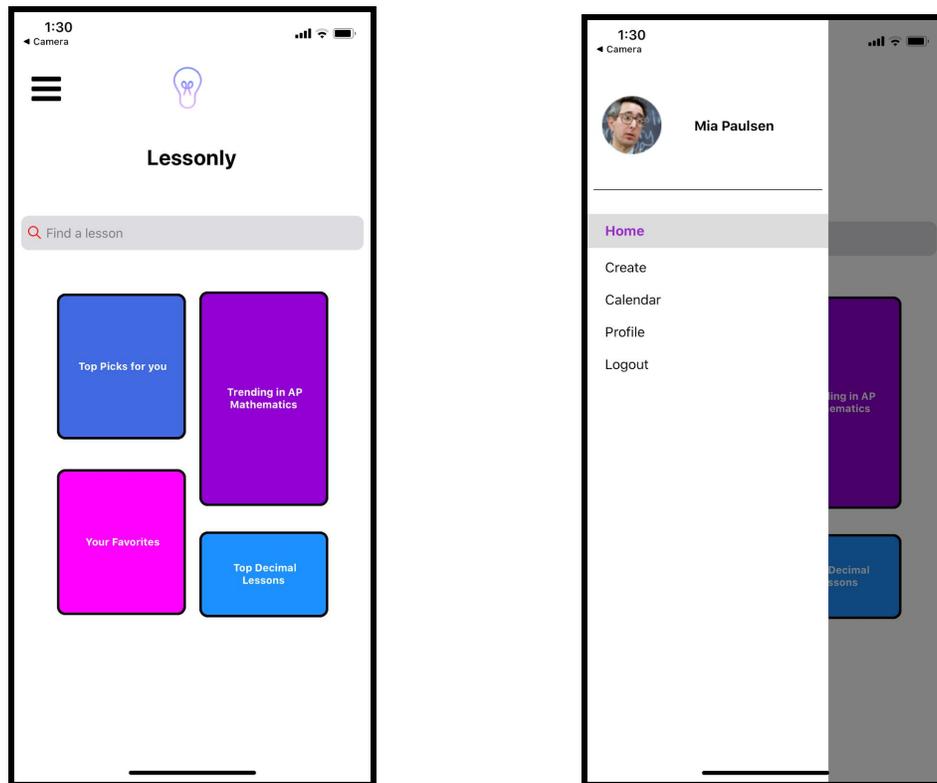


Figure 1
Design Solution to our Problem

Lessonly 3

Tasks & Final Interface Scenarios

Task 1

Create a Lesson (Simple)

We chose our first task to be creating a lesson because this will be the core of the Lessonly experience. In order for there to be a large database of effective and creative lessons, teachers must add their best lesson plans to Lessonly. As teachers use and build off of each other's lesson plans, Lessonly will reach its full potential. As seen in Figure 2, teachers are prompted to input the various aspects of their lesson before saving and sharing with other teachers.

Lessonly 4

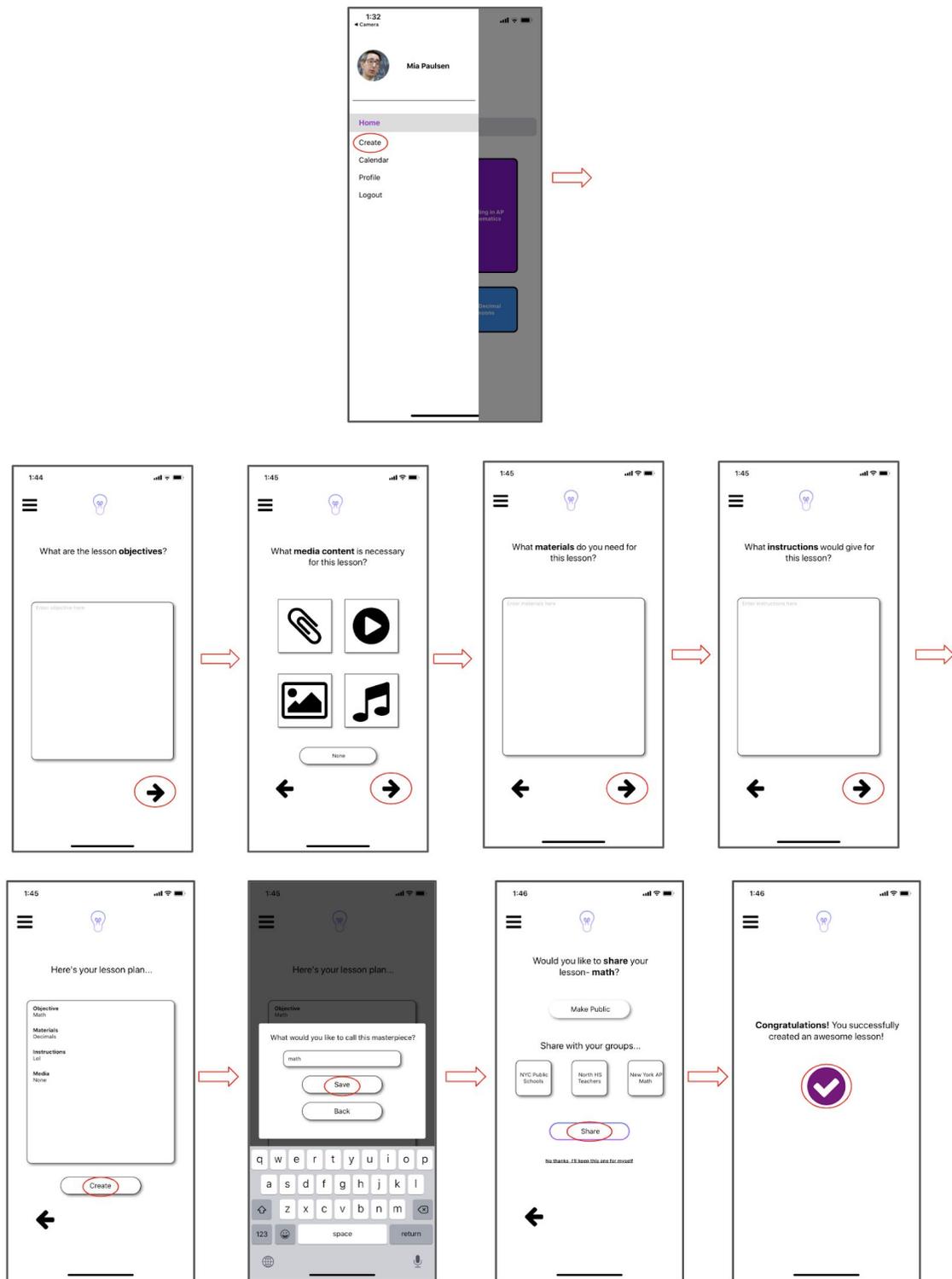


Figure 2
Task 1 Task Flow

Lessonly 5

Task 2

Give Feedback (Moderate)

We chose our second task to be providing feedback because we expect users to utilize this feature after they are done using someone else's lesson. This is the moderate task because it requires more involvement and engagement from the user in another teacher's lesson. Also, providing feedback helps rank the lesson relative to other lessons in that subject. As seen in Figure 3, users can rate a lesson out of five stars, and leave constructive comments for the lesson creator and other users.

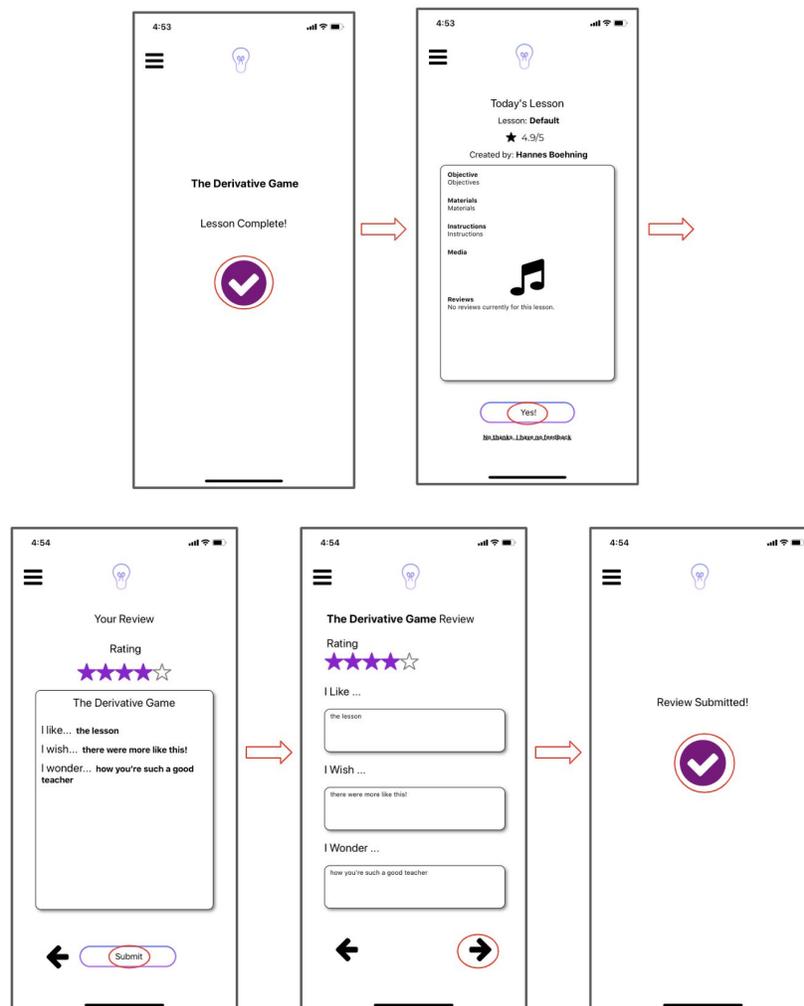


Figure 3
Task 2 Task Flow

Lessonly 6

Task 3

Find a Lesson (Complex)

We chose our third task to be finding a lesson plan because it builds off of the first two tasks. This complex task shows how Lessonly uses the database of uploaded lessons (task 1) and rankings of those lessons (task 2) to provide lesson plan suggestions for a teacher. As seen in Figure 4, a user can search for specific lesson plans through categories, topics, and teacher groups. After finding a lesson they would like to use, they can save, schedule, teach, or review that lesson.

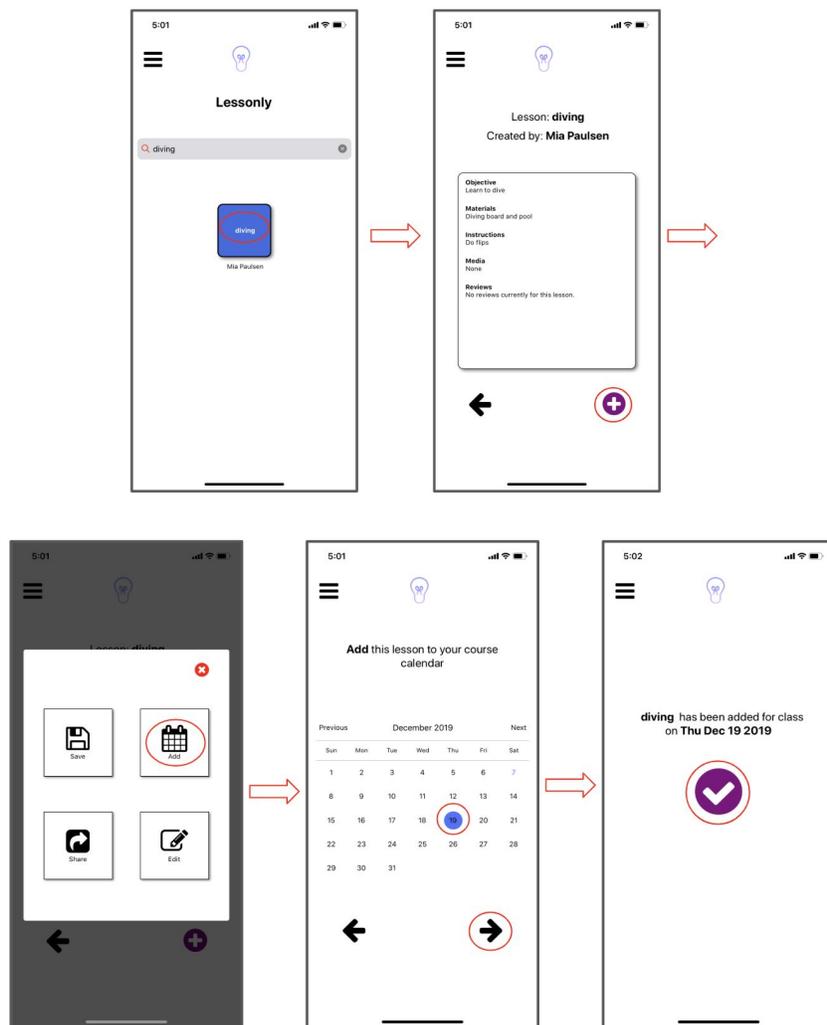


Figure 4
Task 3 Task Flow

Design Evolution

Initial Sketches

In our initial design sketches, we were primarily debating pursuing our Lessonly concept via a watch medium or a mobile app medium. We thought these were the most useful and applicable to the classroom, rather than other mediums like VR technologies or websites. In our initial mobile app design (Figure 5) we created a focused example of the lesson finding process a user would go through when searching for a specific lesson. The user could utilize their social educator groups and add a particular lesson to their calendar. In our initial watch design (Figure 6) we created an example of a user selecting the lesson they want to use in the classroom and receiving real-time notifications on the watch as they teach. Ultimately we decided to pursue the mobile app design interface because we felt that it provided much more functionality than the watch, given that the watch has very limited screen space.

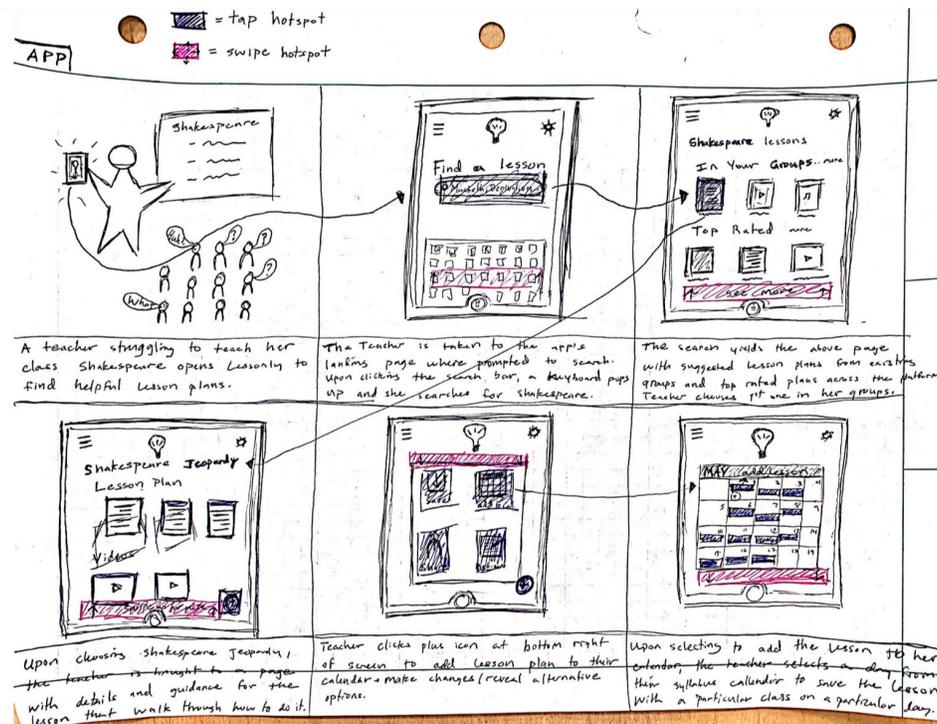


Figure 5
Mobile App Initial Sketch

Lessonly 8

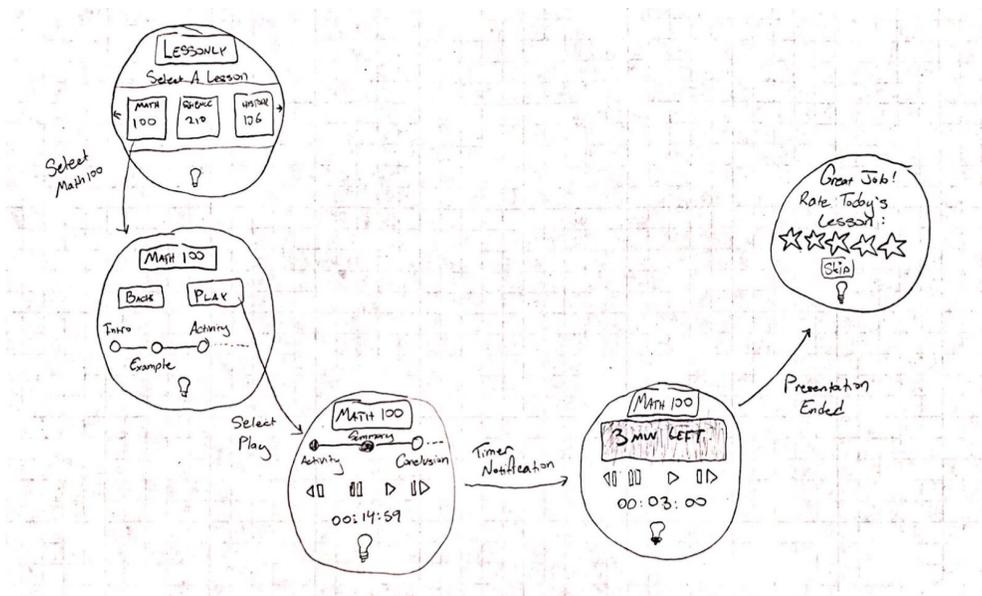


Figure 6
Watch Initial Sketch

Low-Fi Prototype

We implemented our three tasks on a paper screen low-fidelity prototype, and used three participants to observe how users interacted with this design. As seen in Figure 7, our paper prototype was intended to simulate our UI. After our testing with participants, we noticed that a large area for improvement was clarifying our iconography. The icons should be consistent and intuitive over the entire application. Also, we realized that the user must have the freedom to manage their privacy, as some users might feel uneasy about sharing their lesson plans with public groups. We were able to change these aspects of our design as we moved forward to the Med-Fi prototype.

Lessonly 9

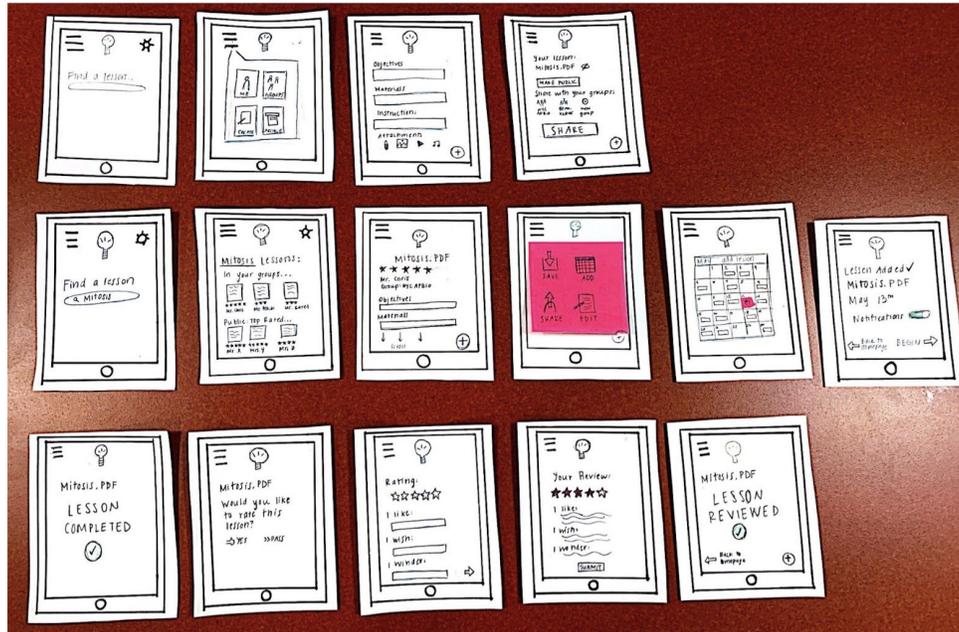


Figure 7

Low-Fi Prototype Overview

Med-Fi Prototype

In our medium-fidelity prototype, we first expanded on the three paper tasks as seen in Figure 7. In our first task, the biggest design change from the initial design (Figure 8) was adding suggestions to the landing page of the app, instead of just having it be blank. We also extended the interaction between the user and the app by having a single step per page flow, instead everything on one page (Figure 9).

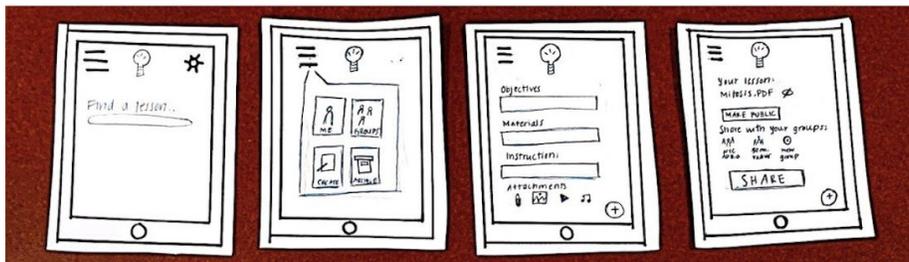


Figure 8

Task 1 Before Changes

Lessonly 10

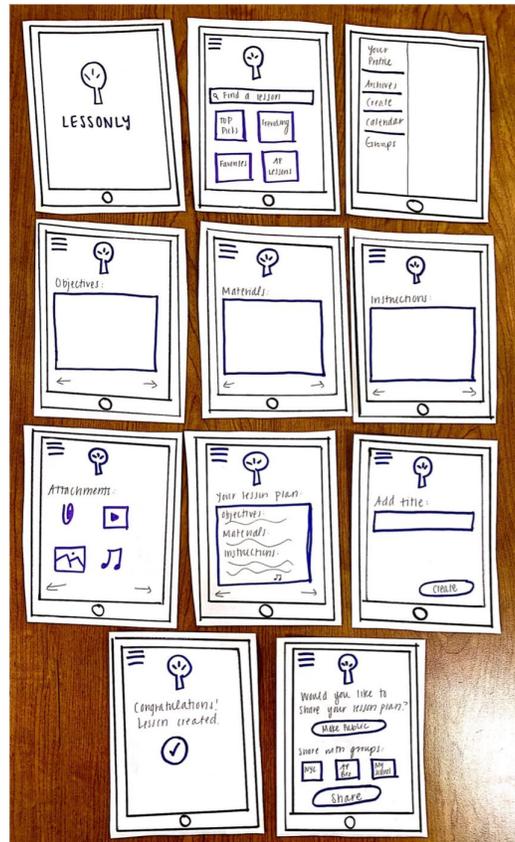


Figure 9

Task 1 After Changes

In our second task, we also incorporated more pages allowing us to display each step individually. Another important change from the initial design (Figure 10) was allowing for more detailed searching filters. Before we had a general keyword search, but here we allow one to search with multiple filters (top picks, ap lesson, favorites, etc.) and the search results are categorized for quick look-ups (Figure 11).

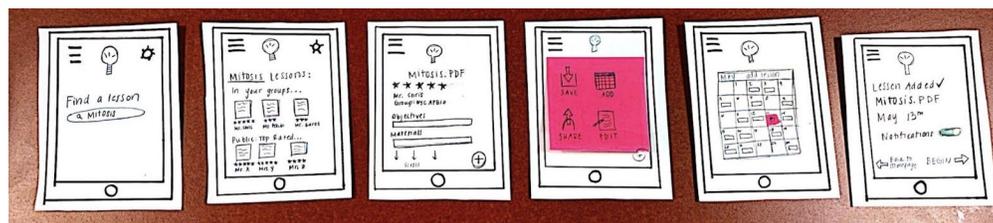


Figure 10

Task 2 Before Changes

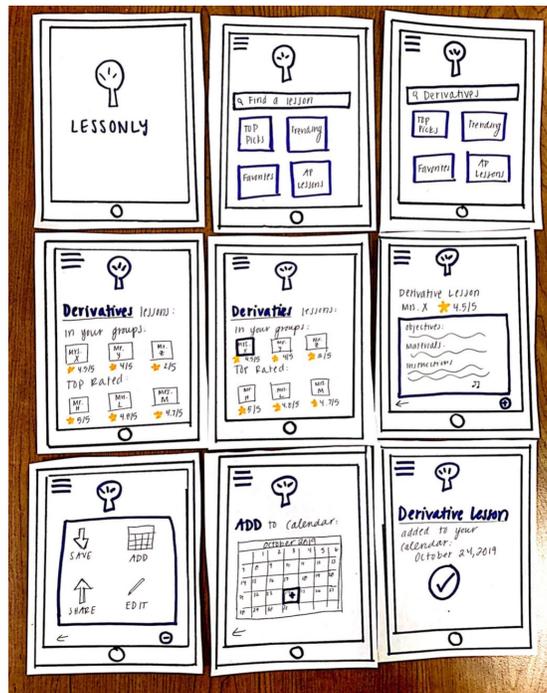


Figure 11
Task 2 After Changes

In our third task, our biggest design change from the initial design (Figure 12) was showing how the user would select and use a lesson (i.e. from the calendar) and then be able to review the lesson. This gives us a more holistic representation of the users experience, instead of just the final result. We also added a some navigation buttons along with the pre-existing menu button (in the top left corner) and explanatory banners and messages (Figure 13).



Figure 12
Task 3 Before Changes

Lessonly 12



Figure 13

Task 3 After Changes

After making these changes on a paper prototype, we implemented this design using Figma. We made more accurate depictions of our UI design for task 1 (Figure 14), task 2 (Figure 15), and task 3 (Figure 16).

Lessonly 13

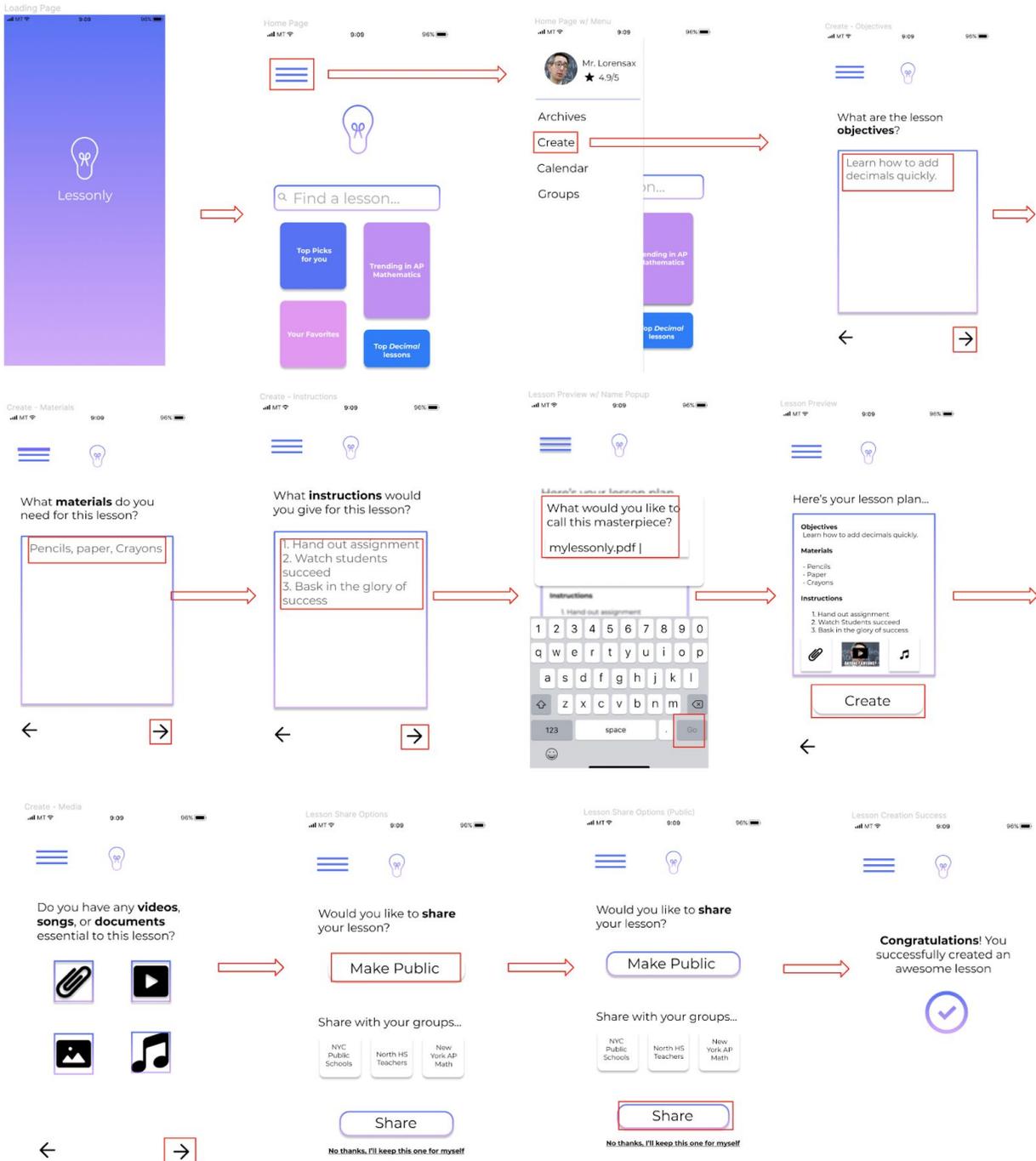


Figure 14
Task 1 Med-Fi Prototype

Lessonly 14

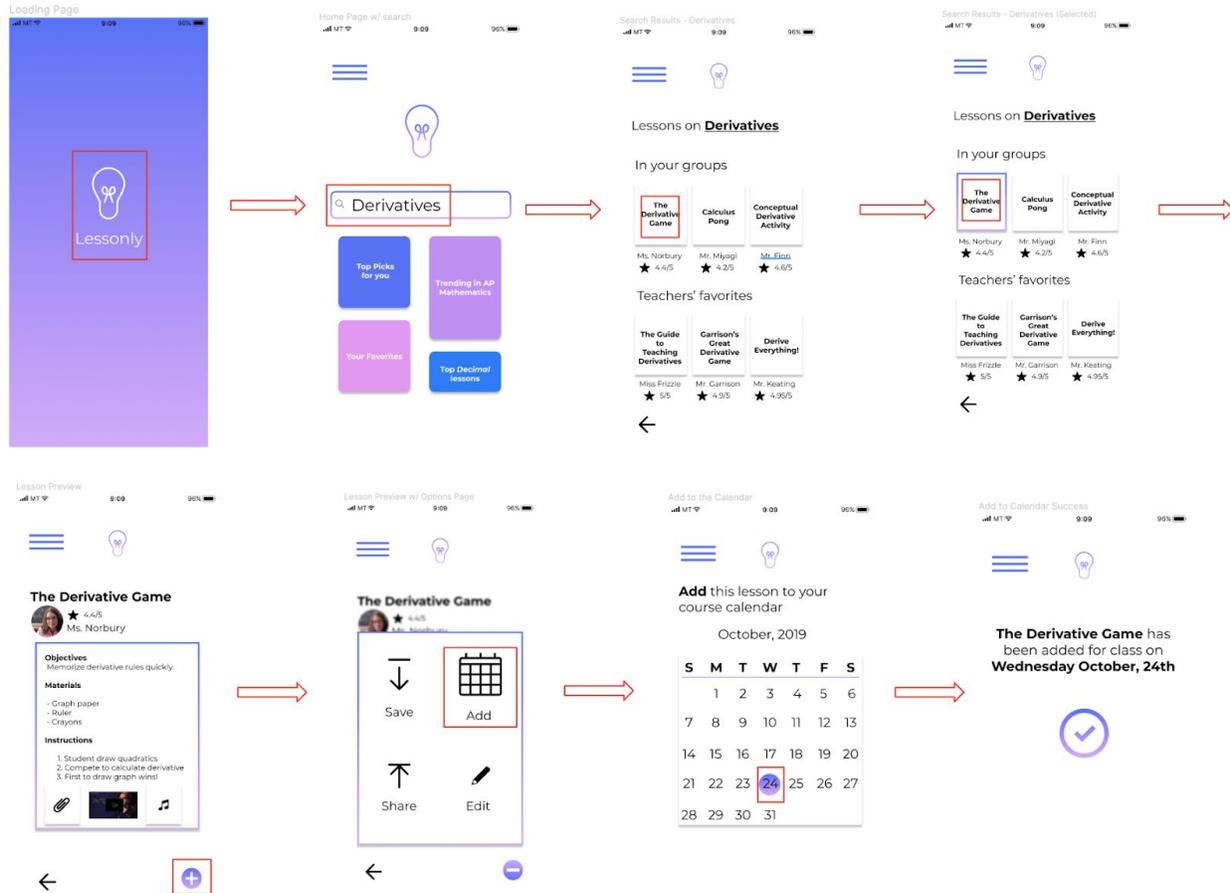


Figure 15
Task 2 Med-Fi Prototype

Lessonly 15

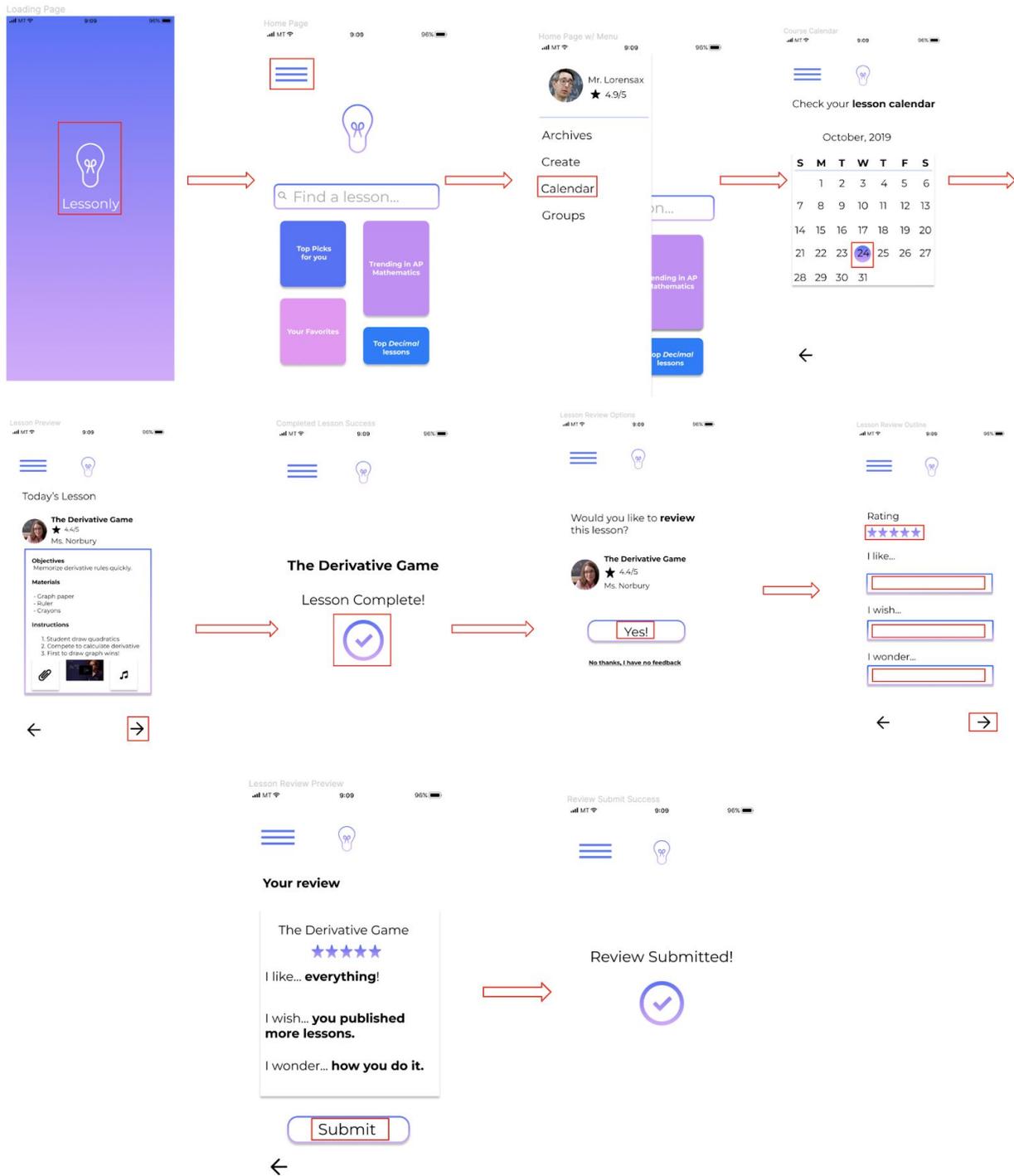


Figure 16
Task 3 Med-Fi Prototype

Lesson 16

Hi-Fi Prototype

In our hi-fi prototype, we redesigned parts of the UI design based on the feedback we received from a heuristic evaluation. We discuss these changes in the major usability problems section below.

Major Usability Problems Addressed

Heuristic Violations of Severity 3 or 4

H3, Severity 3

Violation:

On task #1, the user click on the menu button to “create” a lesson. The first screen that asks for lesson objectives displays two buttons (left and right) at the bottom. However, when I tap the “left” button, I am taken to a screen I did not want to reach. I recommend removing the “left” button when coming from the “create” option of the sidebar. You could replace the “left” button with one that takes user to homepage (using the home icon). (Figure 17)

Fix:

In order to fix this problem, we made the lightbulb icon on each page take you to the home page when it is clicked. Also, we removed the “left” button. (Figure 18)

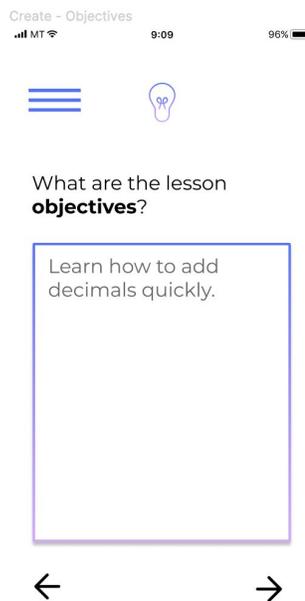


Figure 17
Severity 3 Violation



Figure 18
Severity 3 Violation Fix

Lessonly 17

H3, Severity 4

Violation:

When I start executing task #1 and halfway through and I decide to view my “menu” options again by clicking on the hamburger menu icon, I am taken away from my current screen forcing me to restart everything. I recommend making the sidebar menu be an overlay on top of the current screen so that user can easily come back to the current screen and continue or just change their mind and do something else from sidebar. In general there is no way to easily go home, the user must complete a task to do so. (Figure 19)

Fix:

We added a swipe left to right functionality to open the menu screen, so now the user does not have to leave the page they are on and can easily access the hamburger menu. (Figure 20)

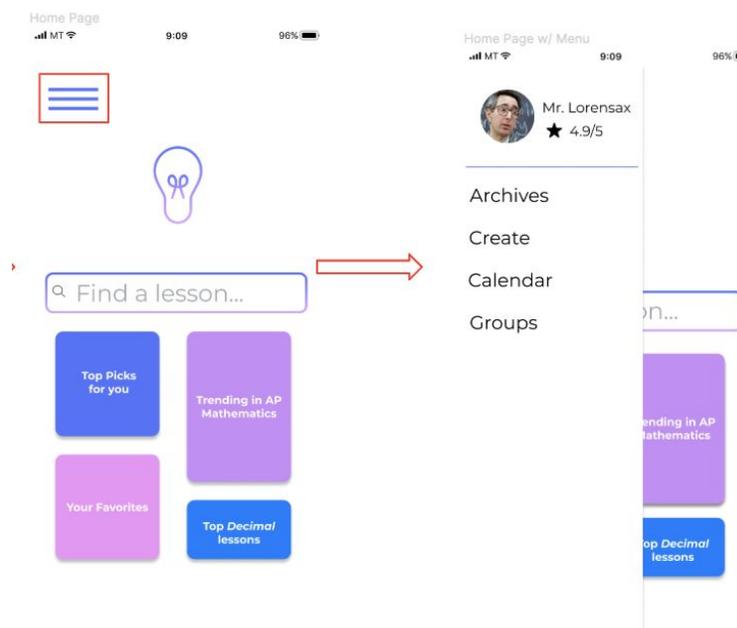


Figure 19
Severity 3 Violation

Lessonly 18

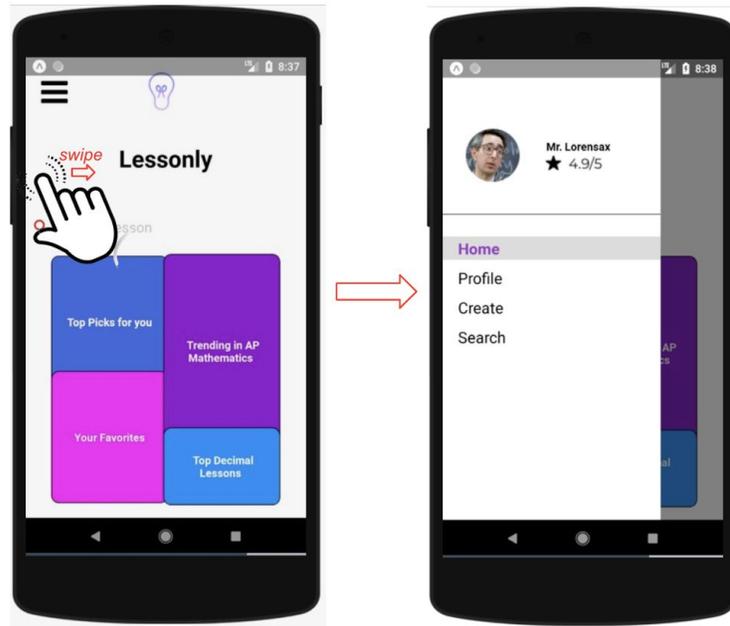


Figure 20
Severity 3 Violation Fix

H2. Severity 3

Violation:

When I have entered the lesson objectives, materials and instructions, the system then asks me “Do you have any videos, songs or documents essential to this lesson?”. Usually, in the real world, this question admits a “yes” or “no” answer when it is crucial for the user to simply choose from multiple options. I would have a prompt that says: “Upload media content”, give the 4 media options to the user and a last one that says something like: “No media source to attach”. (Figure 21)

Fix:

Changed to just “What media content is necessary for this lesson?” in order to incorporate the possibility that a user might want to upload various documents or media. Also incorporated an option for none or if the user continues to the next page it defaults to none. (Figure 22)

Lessonly 19

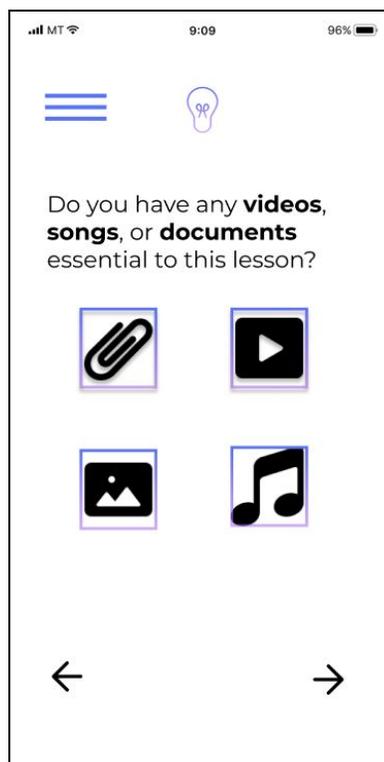


Figure 21
Severity 3 Violation

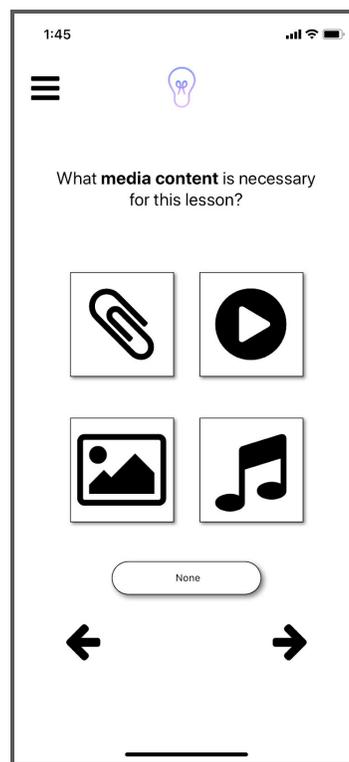


Figure 22
Severity 3 Violation Fix

H8, Severity 3

Violation:

On the summary screen that completes task #1, there are three items at the bottom that can be very confusing. There is no spacing that allows one to distinguish the different items and the media content seems out of place. I would make sure the media source occupies a row on its own and it should be big enough to easily tell whether it is a video, an audio file, an image or a pdf document. It should be above the other two buttons which I would remove since they don't intuitively say what their purposes are. (Figure 23)

Fix:

We fixed this issue by making the icons much larger, centered, and in a vertical scroll rather than a horizontal scroll. (Figure 24)

Lessonly 20

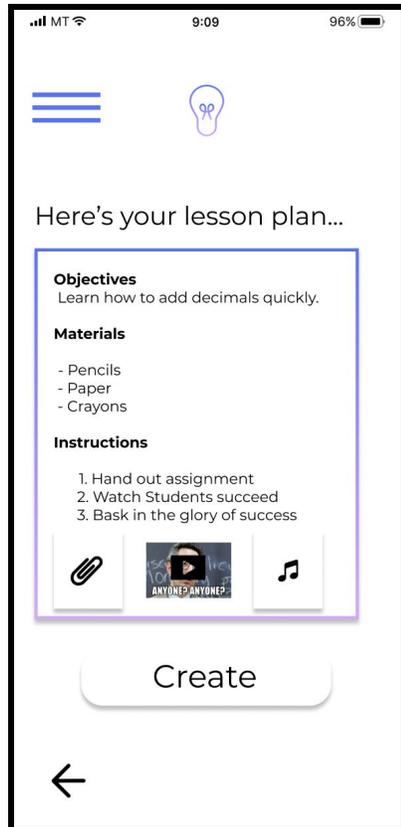


Figure 23
Severity 3 Violation



Figure 24
Severity 3 Violation Fix

H2. Severity 3

Violation:

For task #2, the sidebar shows “calendar”, when in real life, one does not expect to view the calendar and then complete a lesson: “Lesson complete”. There is no obvious relationship between viewing calendar content and completing a lesson. I would rename this section as “My lessons” and remove the calendar to simply show lessons with timestamps. When user clicks those lessons, they see further details and give feedback/reviews. (Figure 25)

Fix:

We fixed the button to say “start” rather than just a forward arrow, so it is more intuitive that a screen showing a completed lesson would come afterwards. (Figure 26)

Lessonly 21

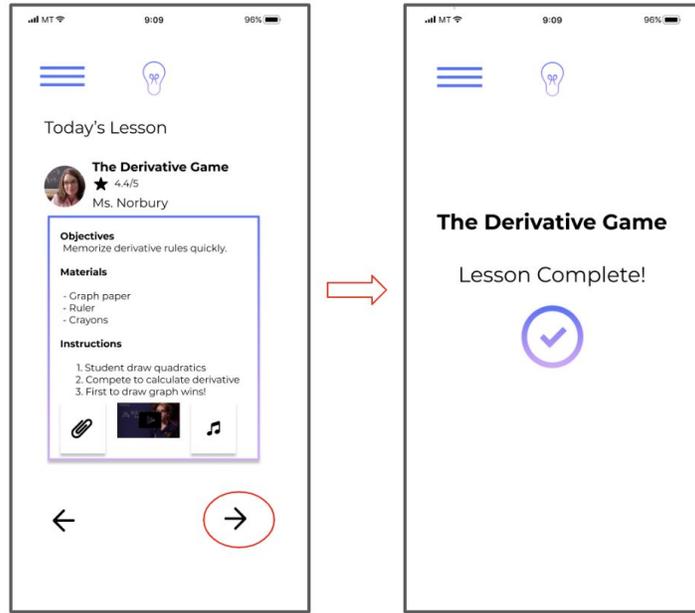


Figure 25
Severity 3 Violation

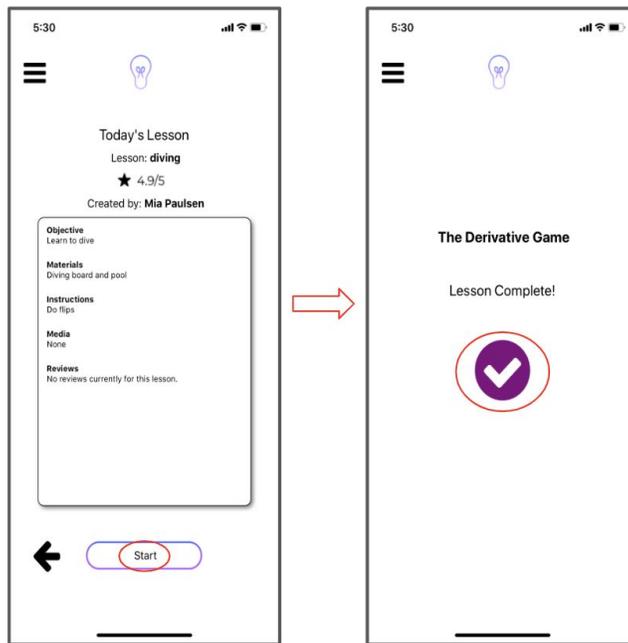


Figure 26
Severity 3 Violation Fix

Lessonly 22

H4, Severity 3

Violation:

When creating a lesson on the screen that says “would you like to share your lesson,” there is a lack of consistency between the outline of the “make public” and “share” button. Would be better if these were both either completely different or more similar. It isn't clear that this button has to be selected like the share button does.

Fix:

We did not end up fixing this because the user is in fact able to click all of them, and the button changes colors after it is clicked. Overall, we did not think this was confusing when implemented on the hi-fi prototype.

H5, Severity 3

Violation:

The screen asking to share with others could be better formatted: It seems that “make public,” “share” and “no thanks” are all valid options - but it is unclear if “make public” and “share” are the same? Or if the user should click on just one of these options or multiple? I am a bit confused about what these different buttons actually do. Can either remove the “make public” button or reflect that it is toggle-able.

Fix:

We found this violation extremely similar to a previous violation, please see H4, Severity 3 violation exactly above.

H3, Severity 3

Violation:

There should be more steps to share lessons on this screen, or better support of undoing an action such as sharing in case this is an accident. Can also add more steps such as “Are you sure?” or “confirm” before sharing. (Figure 27)

Fix:

Added the ability to go back and change input for lessons fields, as well as being able to remove any media uploaded. Also added a more complete navigation when creating a lesson. (Figure 28)

Lessonly 23

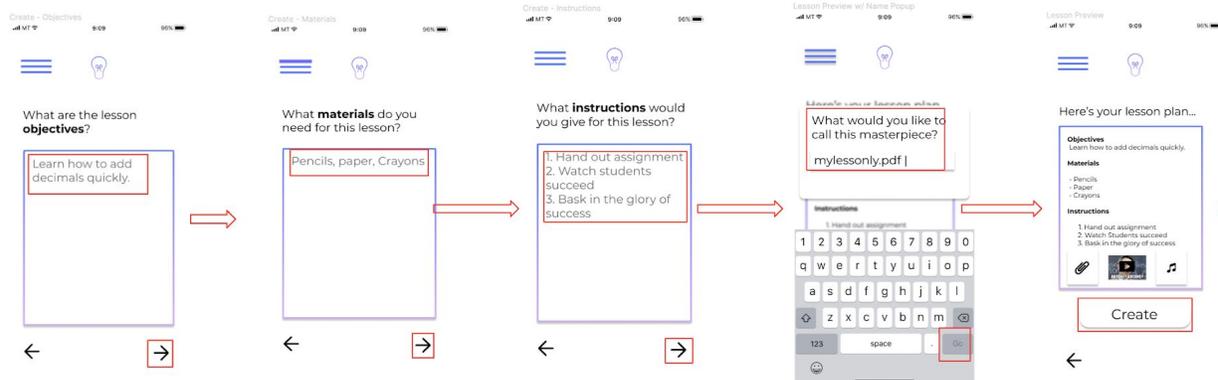


Figure 27
Severity 3 Violation

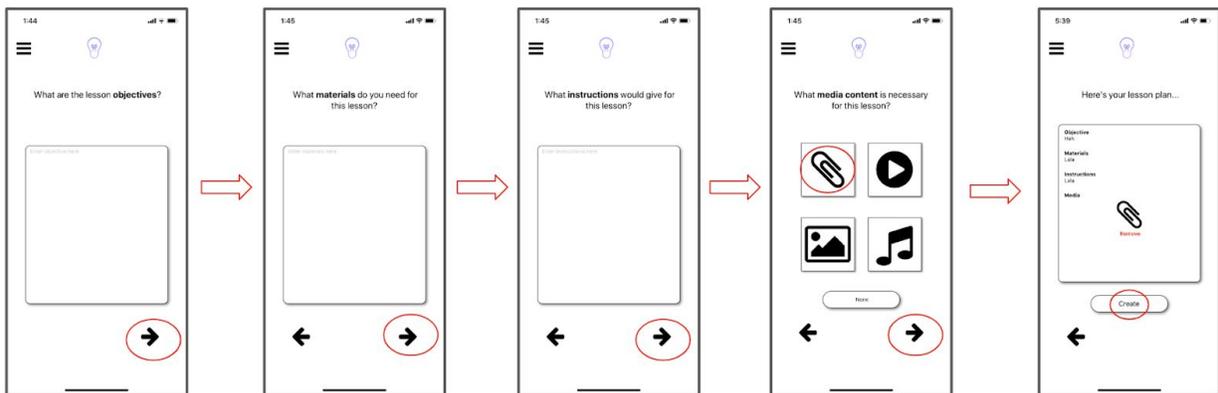


Figure 28
Severity 3 Violation Fix

H4, Severity 3

Violation:

When going to calendar and clicking on a lesson, there is not much clarity regarding what hitting the "next" button means. Would help if there was instead a question such as "did you complete this lesson?"

Fix:

We found this was very similar to a previous violation, please see Figure 25 and Figure 26.

Lessonly 24

H3, Severity 3

Violation:

The interface does not have back arrows at every step where a user might want to go back. Specifically, in the create a lesson plan process, there are back arrows until the user hits the create button and names their lesson plan, where once the user is on the final step of sharing their lesson plan, there is no way to go back and revise any previous information. This is an issue because there should be user control and freedom to go back a screen and fix any issues. Add back buttons at every step where a user has to select options, specifically for the above case, back button on the sharing screen. (Figure 29)

Fix:

Added back buttons arrows clearly in order to give users maximum freedom at every step of the process. Incorporated this concept not just for this example, but to all aspects of the prototype. (Figure 30)

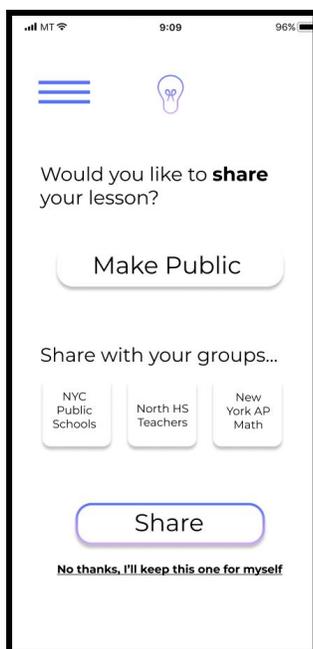


Figure 29
Severity 3 Violation

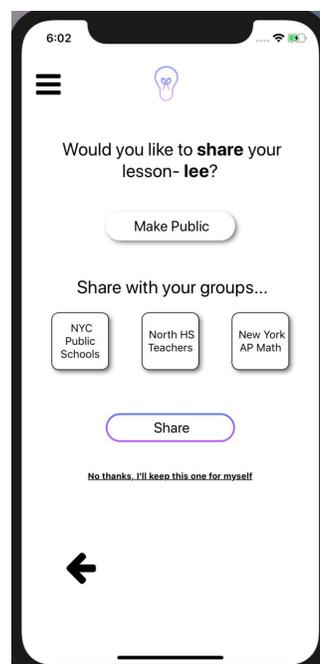


Figure 30
Severity 3 Violation Fix

Prototype Implementation

We developed and tested our prototype for ios using Expo and ReactNative. Doing so allowed us to run the application on our local machine while creating the app, as well as publishing it through a link to be viewed and tested by others. One big downside of using expo, is only the author of the application can run the application. Otherwise, learning ReactNative and using Expo was very smooth and effective in allowing us to try multiple ideas as well as matching our High-fi design with the our Medium-fi design. The access to various packages and API's allowed us to focus more on functionality and implemented a backend solution for our application. The main constraint with building our application was the learning curve in the given time frame. Regardless, we still very much enjoyed the process and seeing our application come into fruition.

Here is the complete list of pros and cons for the tools we used to build our prototype:

ReactNative → front-end framework for UI/UX

- **Pro's:** Easy to match our previous design, lots of useful packages and API's to use
- **Con's:** Bit of a learning curve and difficult syntax for styling

Expo → test & run locally, publish on server

- **Pro's:** Allowed us to develop and test the prototype locally, as well as publish online
- **Con's:** Some limitation in 3rd party sources and packages that can be used.

npm & Node.js → package manager and backend framework

- **Pro's:** Basic packages for RN and allowed us to implement firebase with relative ease.
- **Con's:** None!

Firebase → authentication, data storage

- **Pro's:** Great way to create/authenticate users, store basic data, as well as general storage for photos and other files. Gave us the ability to add more dynamic functionality and less hardcoding.
- **Con's:** Took some time to get used to syntax

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Github & Git → storing and managing codebase

- **Pro's:** Made it easy for us to run the prototype and develop it
- **Con's:** None!

Sublime → our text editor of choice

- **Pro's:** Great interface and wide usability
- **Con's:** None!

Wizard of Oz

- Working with the user to ensure lesson plan quality/creativity
- Real-time, in-lesson cues
- Adding/save/share/edit a lesson
- Uploading anything but a photo

Hard-coded Data

- Suggestions
- Lessons set for the calendar data (random selection)
- User photo

What is missing and what might we like to add in the future?

- Adding a desktop component, which would be the main use of the idea
- Incorporating a real-time reminder during presentations for time left, activities to do, etc.
- Increasing security and privacy options for users and their lessons
- More focus on creating groups for users to share resources (i.e. adding a tab in their profile for their groups)
- Being able to track your reviews, lessons saved, ect. in profile

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Summary

Ultimately, the design thinking process, as the framework through which this entire project was completed, was the guiding force driving the nuances of our final product. We found that, by choosing to stay true to the preliminary data gathered in our needfinding, experience prototyping, brainstorming, and ultimately testing phases, we managed to build a product that satisfies a real need in the educational technology space. The inspiration for the project, one that was uncovered during the early phases of our design process, was the importance of inspirational, creative teachers in shaping students' educational journeys and success. This initial inspiration manifested as a platform for lesson plan creation, sharing, feedback, and management capable of empowering teachers and improving student experience. It's the online teachers' lounge for our digital age.