



LearnAble

Personalized learning for students with dyslexia

Sarah Marshall · Michele Miao · Sanjit Rajendiran · Max Tian



Problem

- **Dyslexia** affects 5-17% of children in the United States
- Not all dyslexia is the same: **different children** struggle with **different things**
- Teachers have difficulty **personalizing** their instruction, especially in large classrooms





How do we **personalize** reading education for students with dyslexia?

2 tasks



Monitor reading progress
remotely



Assign readings personalized
to the student



Getting the design right





Initial paper prototype



Teacher assigns
personalized readings to
student



Student completes readings
at home

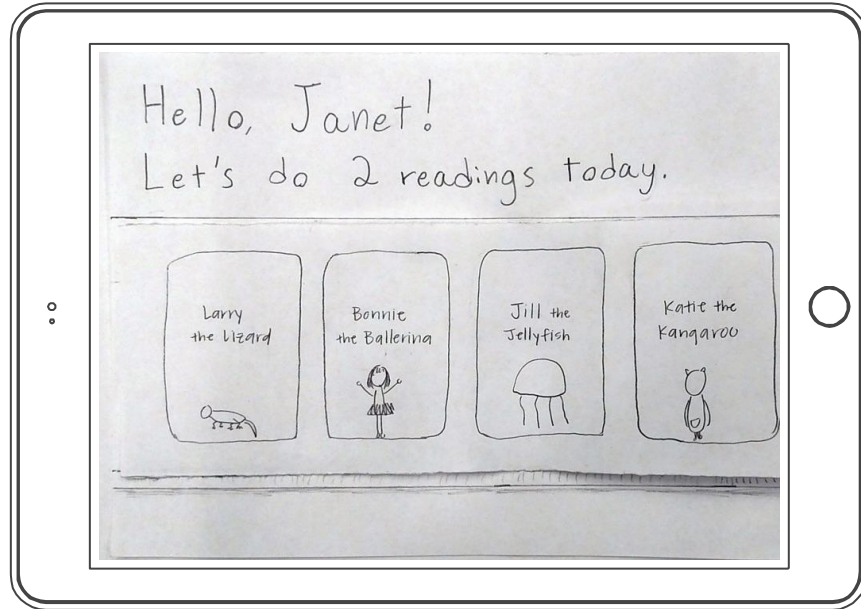


Teacher evaluates
completed reading and
progress



Task 1

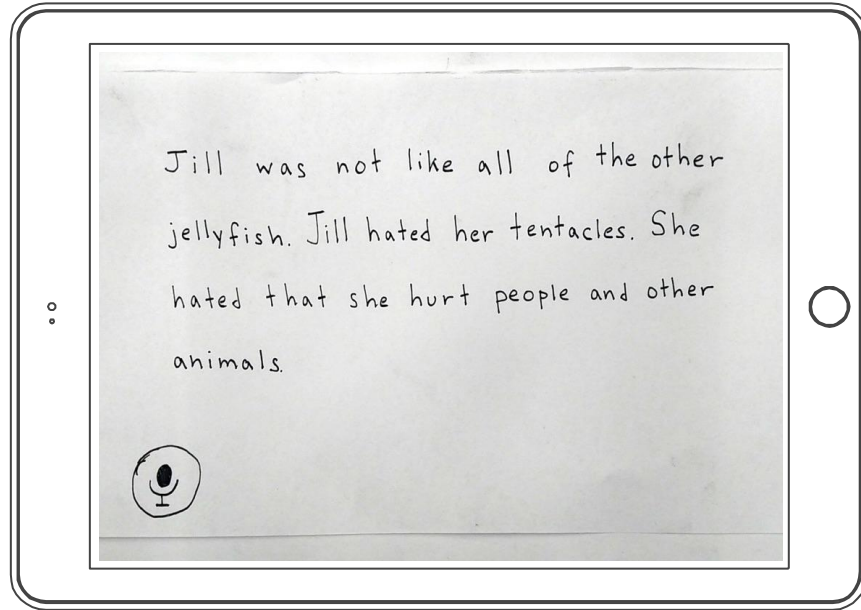
Monitor reading progress remotely



Student views assigned readings and number of readings to complete.

Task 1

Monitor reading progress
remotely



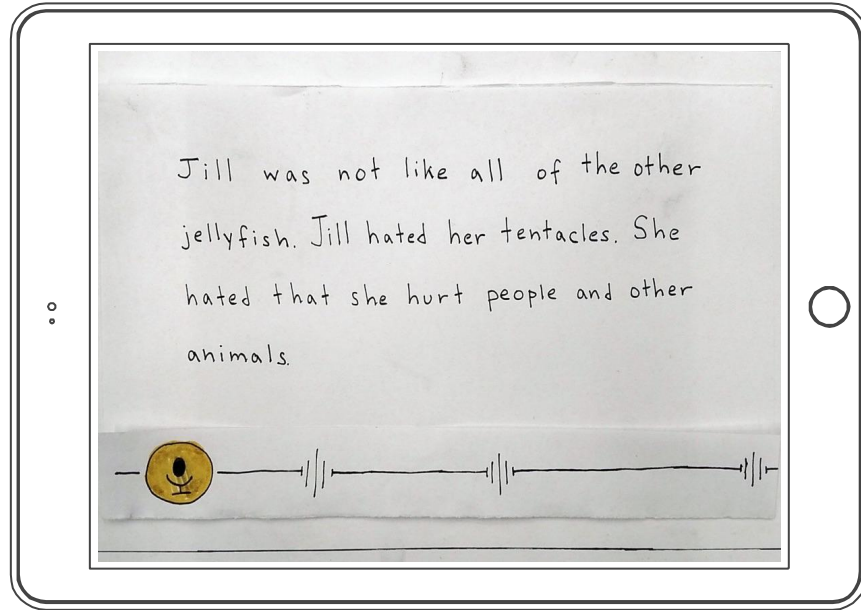
Student selects a reading to complete.





Task 1

Monitor reading progress remotely

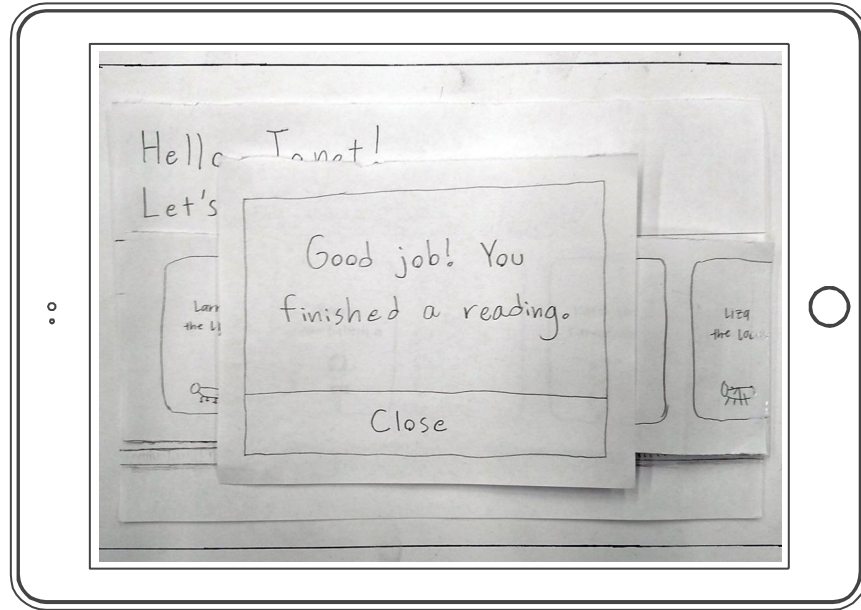


Student hits record and begins to read aloud.



Task 1

Monitor reading progress remotely



Student submits completed reading to teacher.



Task 1

Monitor reading progress remotely

A computer monitor displaying a table titled "LearnAble". The table lists seven students with their names, reading levels, and progress information. Each row is separated by a horizontal line, and there is a right-pointing arrow at the end of each row. The table is as follows:

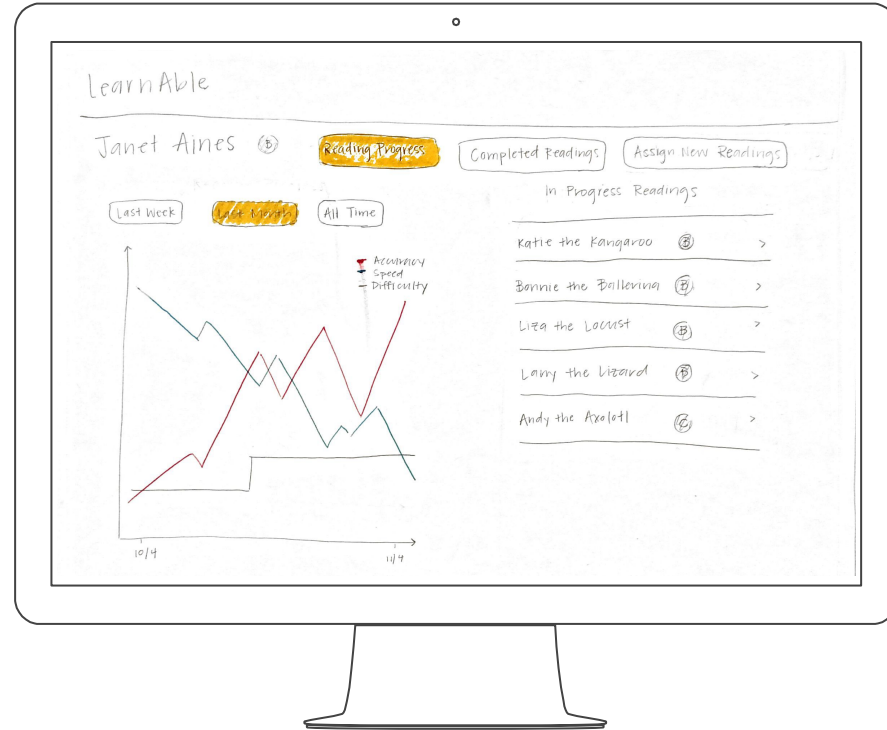
LearnAble		
	reading level	
Janet Aines	B	- 5 readings in progress - Completed 5 readings since last login
Billy Boxer	A	- 1 reading in progress - Completed 9 readings since last login
Stacy Caine	A	- 3 readings in progress - Completed 4 readings since last login
John Edwards	C	- 2 readings in progress - Completed 6 readings since last login
Alice Hope	B	- No readings in progress - Completed 7 readings since last login
Grace Kale	C	- 1 reading in progress - Completed 2 readings since last login

Teacher views list of students and their reading information.



Task 1

Monitor reading progress remotely

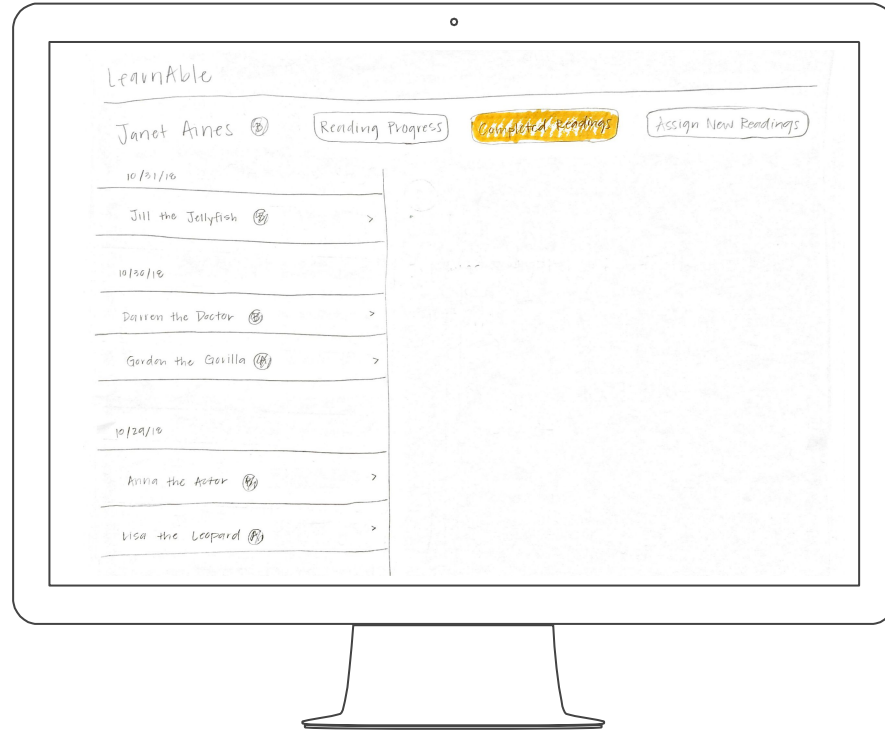


Teacher selects an individual student to view their reading progress and current readings.



Task 1

Monitor reading progress remotely



Teacher views a list of the student's past completed readings.



Task 1

Monitor reading progress remotely

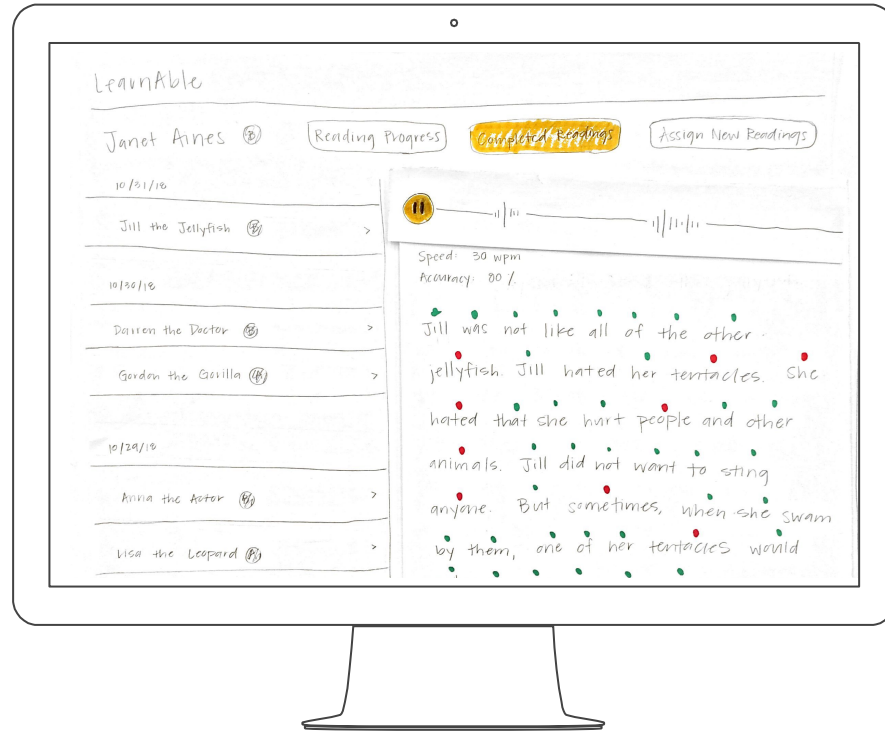


Teacher selects a completed reading to view in detail. Dots denote accuracy of student's reading.



Task 1

Monitor reading progress remotely



Teacher listens to student's recorded audio.

Task 2

Assign readings
personalized to the
student



Teacher views list of readings that match student's reading level & interests.





Task 2

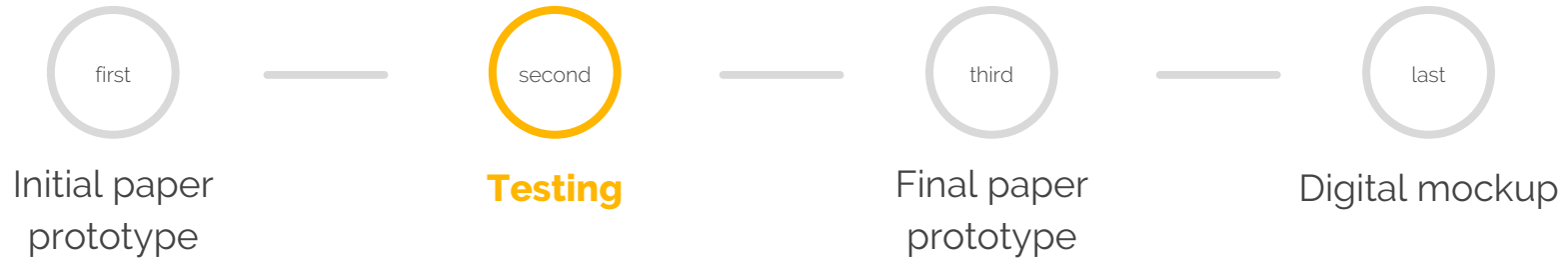
Assign readings personalized to the student



Teacher views and edits list of currently assigned readings.



Getting the design right





Heuristic evaluations

Process

- 2 heuristic evaluations
 - CSE 440 students
- Used Nielsen's heuristics

Results

- Confirm major actions
- Organize students into classes
- Streamline list displays



Usability testing

Process

- 3 usability tests
 - UX designer for dyslexia
 - Adult with dyslexia
 - Adult familiar w/ dyslexia
- 3 tasks
 - Find Janet's reading level
 - Evaluate Janet's reading of "Jill the Jellyfish"
 - Assign "Fred the Fish"

Results

- Increase student control over submissions
- Add search functionality for large lists
- Decrease clutter by using text color instead of dots

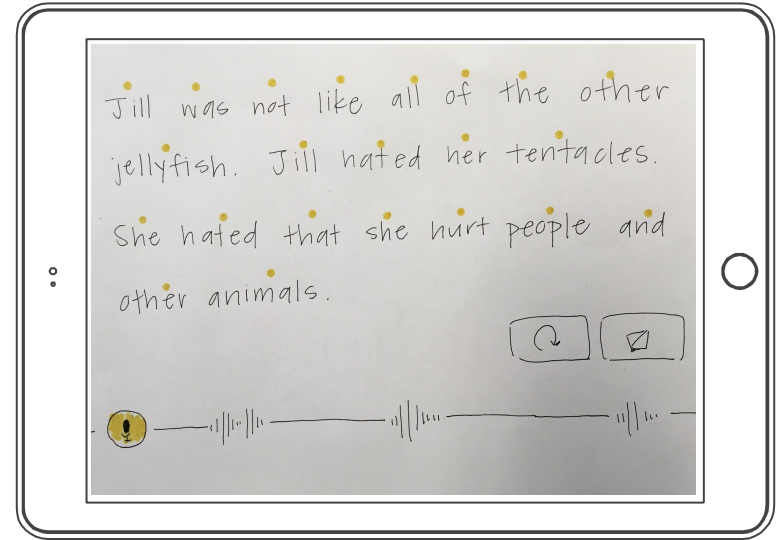
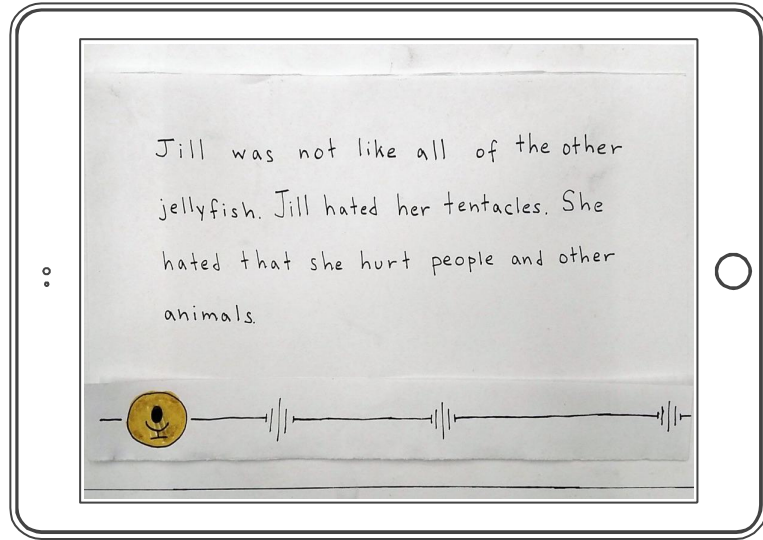


Getting the design right



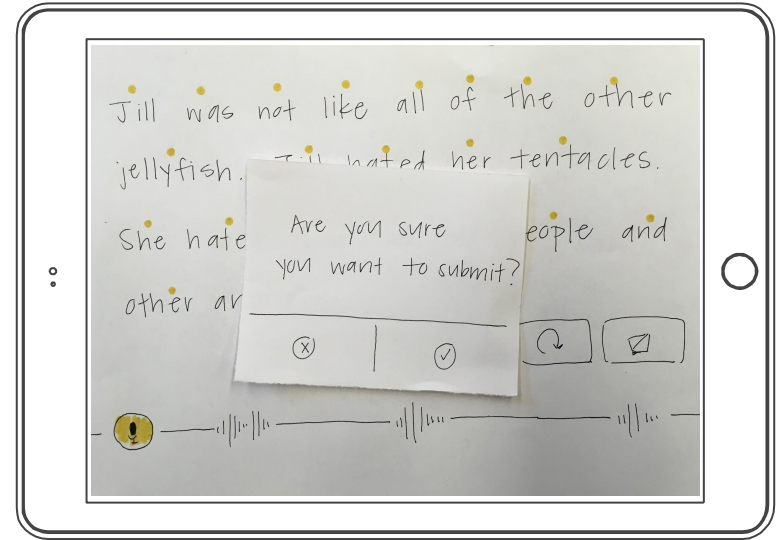
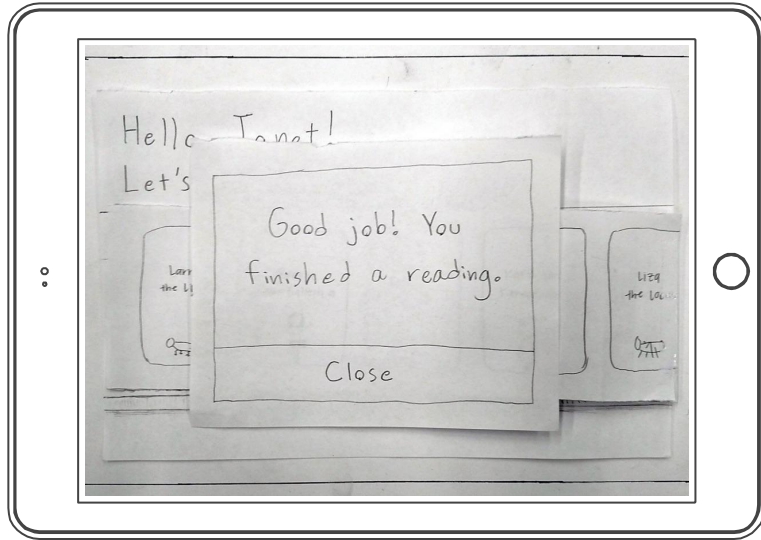


Revision: Increase student control over submissions





Revision: Confirm major actions





Revision: Organize students into classes

LearnAble		
	reading level	
Janet Aines	B	- 5 readings in progress - Completed 5 readings since last login >
Billy Boxer	A	- 1 reading in progress - Completed 9 readings since last login >
Stacy Caine	A	- 3 readings in progress - Completed 4 readings since last login >
John Edwards	C	- 2 readings in progress - Completed 6 readings since last login >
Alice Hope	B	- No readings in progress - Completed 7 readings since last login >
Grace Hale	C	- 1 reading in progress - Completed 2 readings since last login >

LearnAble			Students	Logout
Class A				
Janet Aines	reading level		- 5 readings in progress - 5 readings completed since last login >	
Billy Boxer	A		- 1 reading in progress - 9 readings completed since last login >	
Stacy Caine	A		- 3 readings in progress - 0 readings completed since last login >	
Class B				
John Edwards	C		- 2 readings in progress - 6 readings completed since last login >	
Alice Hope	B		- 0 readings in progress >	

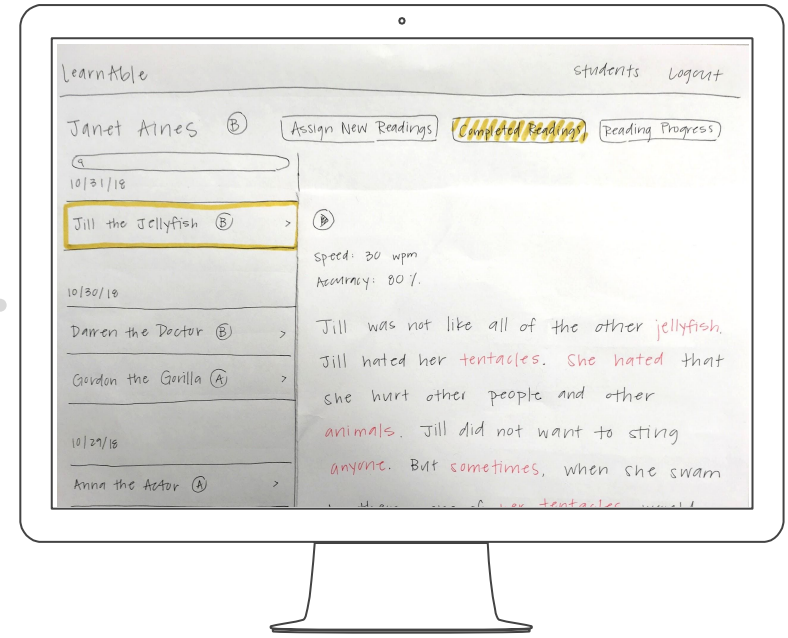
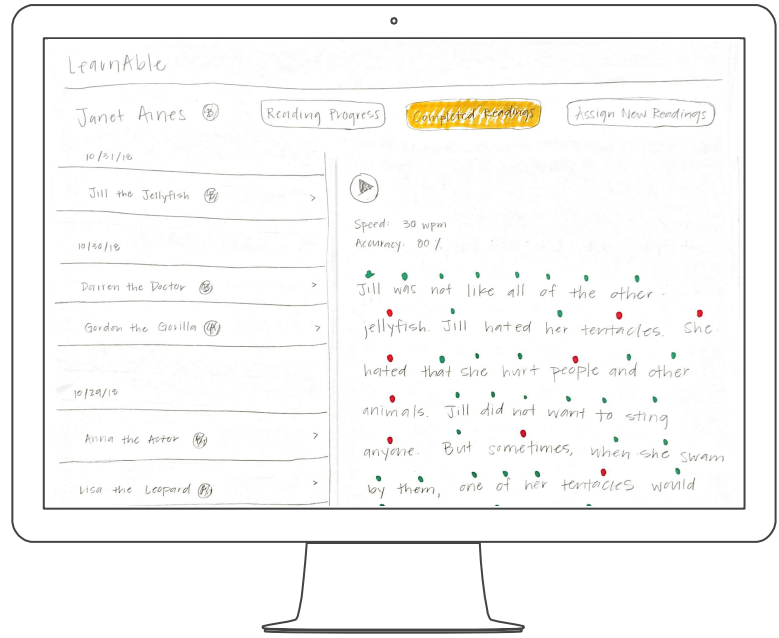


Revision: Streamline list displays & add search





Revision: Decrease clutter by using text color





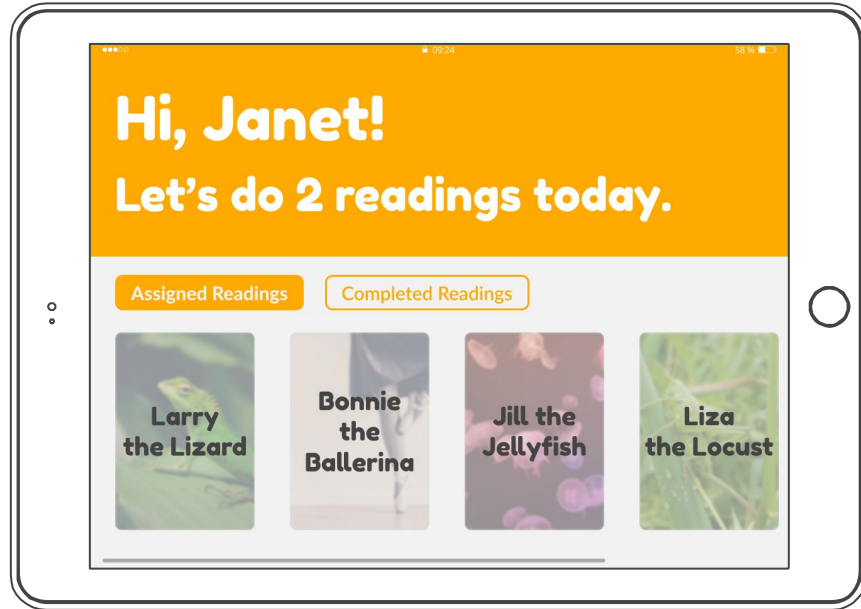
Getting the design right





Task 1

Monitor reading progress remotely

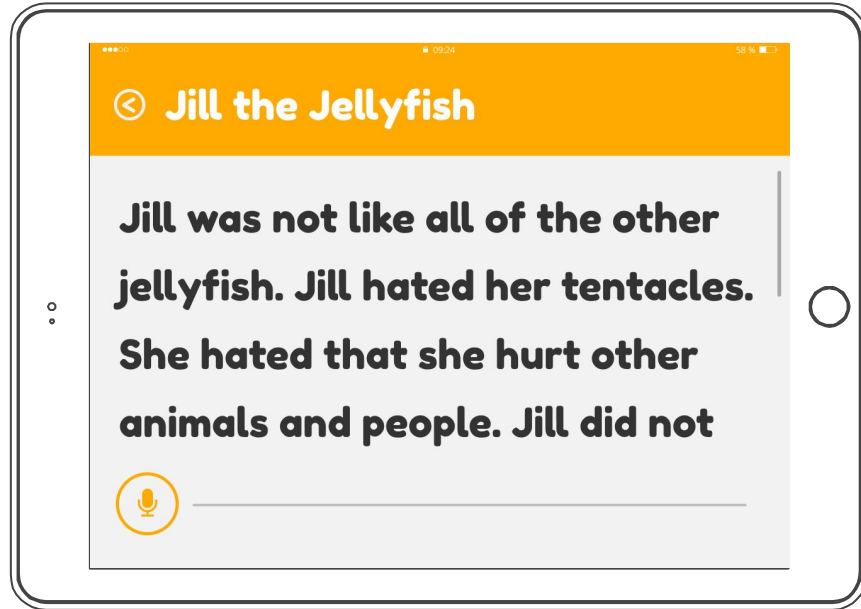


Student views assigned readings and number of readings to complete.



Task 1

Monitor reading progress remotely



Student selects a reading to complete.



Task 1

Monitor reading progress remotely



Student hits record and begins to read aloud.



Task 1

Monitor reading progress remotely



Student has the option to submit or redo reading once they have finished.



Task 1

Monitor reading progress remotely

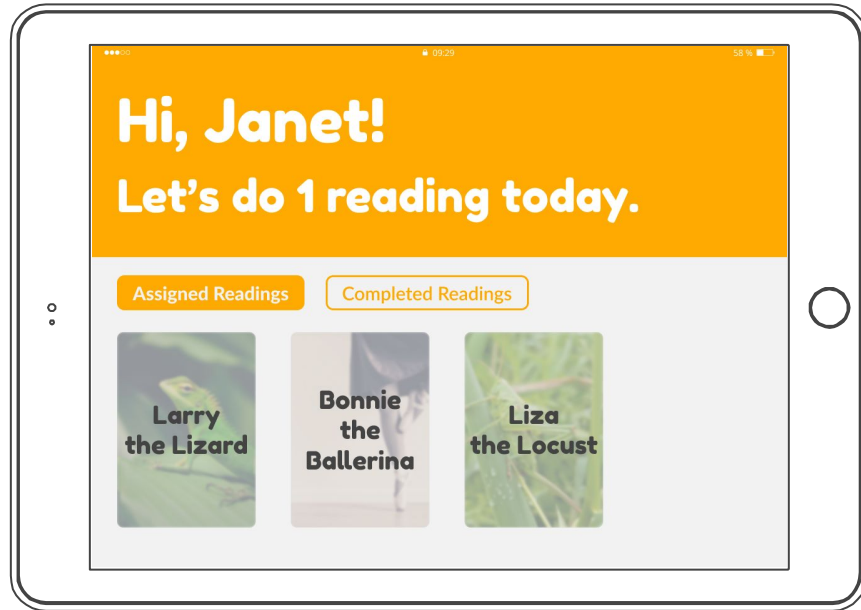


Student confirms their submission.



Task 1

Monitor reading progress remotely

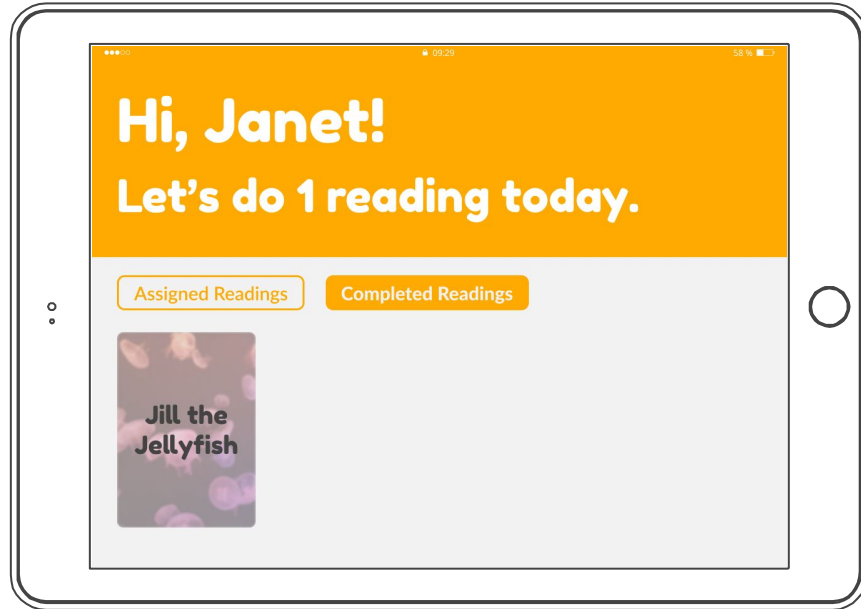


Student views updated assigned readings and number of readings to complete.



Task 1

Monitor reading progress remotely

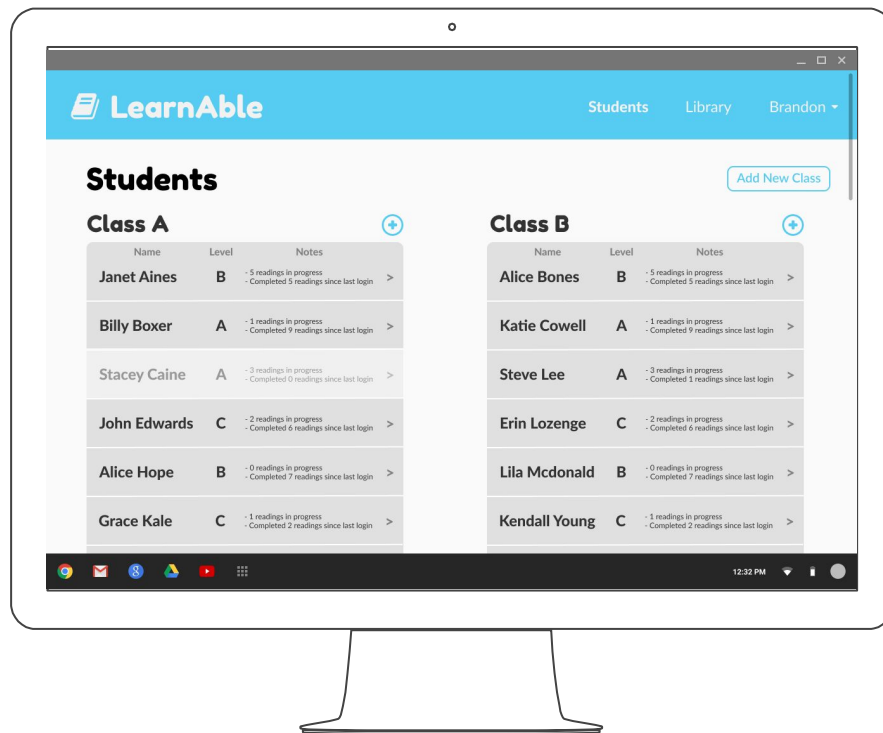


Student views updated completed readings.



Task 1

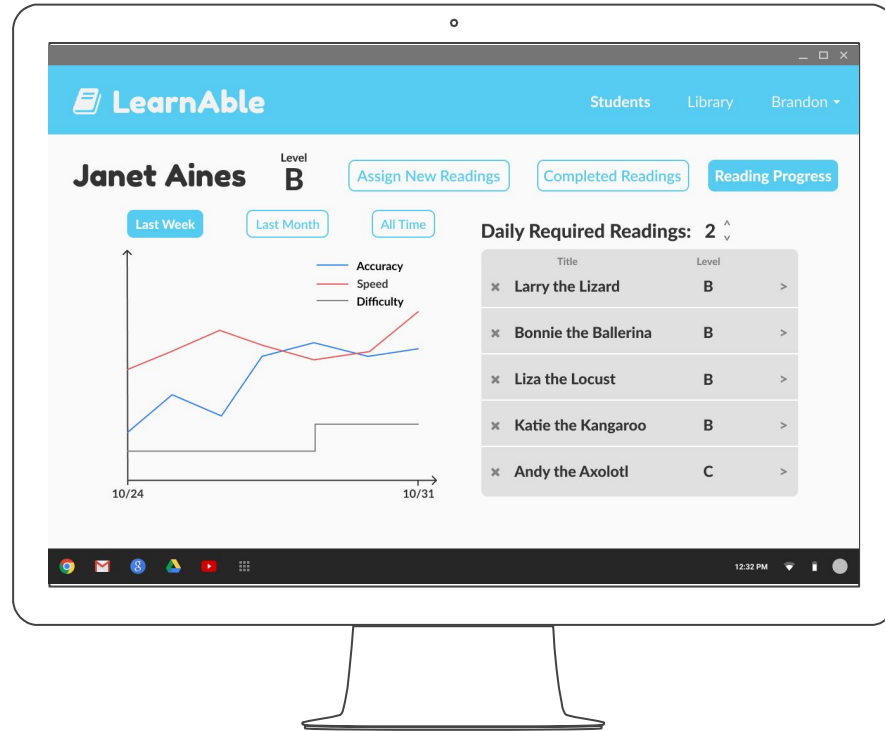
Monitor reading progress remotely



Teacher views list of students and their reading information, organized into classes.

Task 1

Monitor reading progress remotely



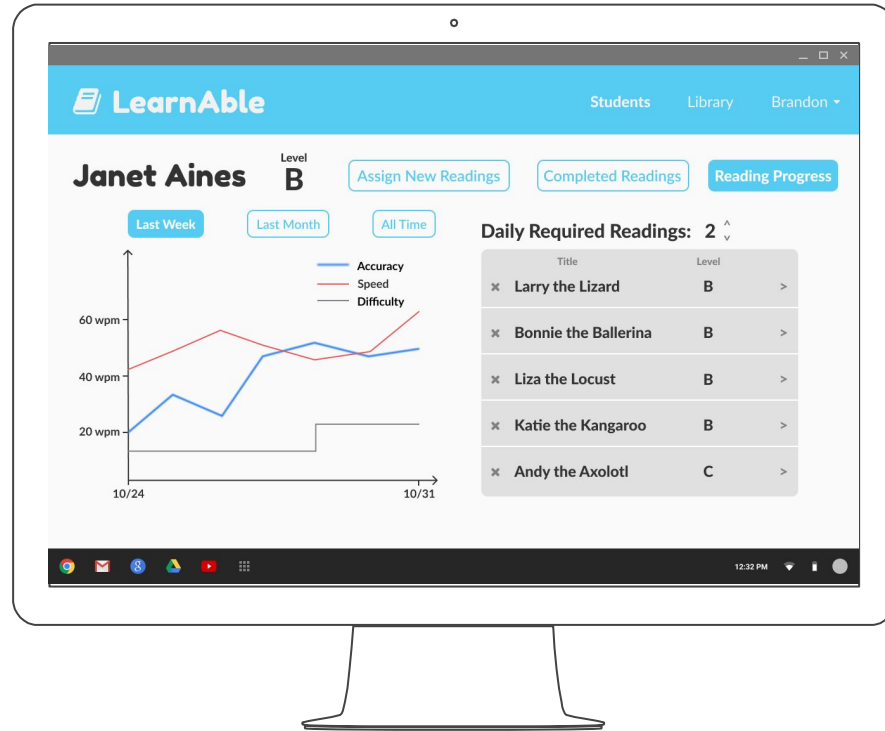
Teacher selects an individual student to view their reading progress and current readings.





Task 1

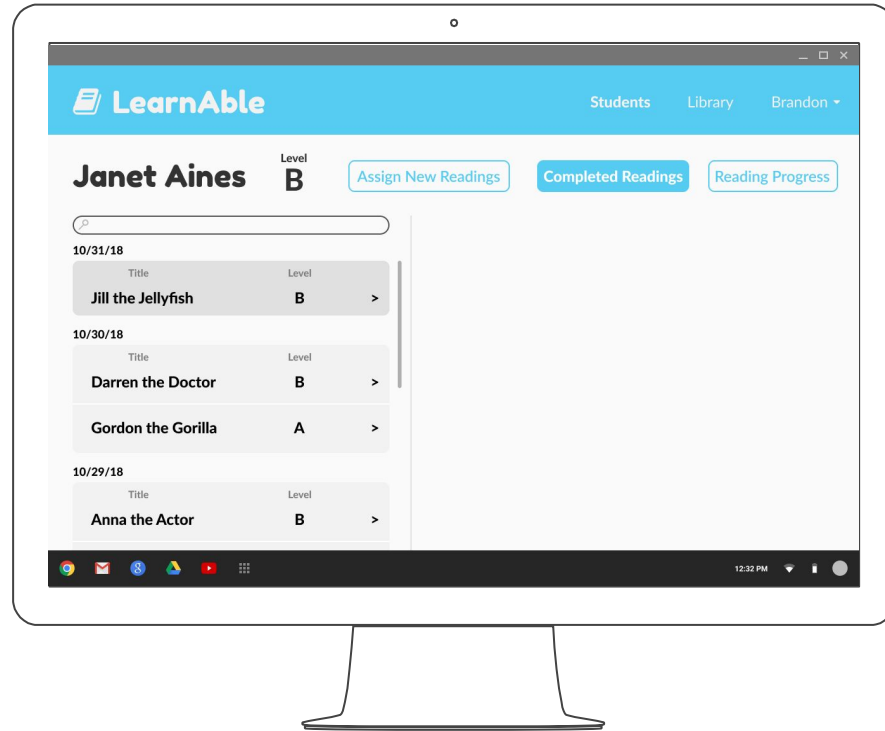
Monitor reading progress remotely



Teacher hovers over "accuracy" plot to view specifics.

Task 1

Monitor reading progress remotely



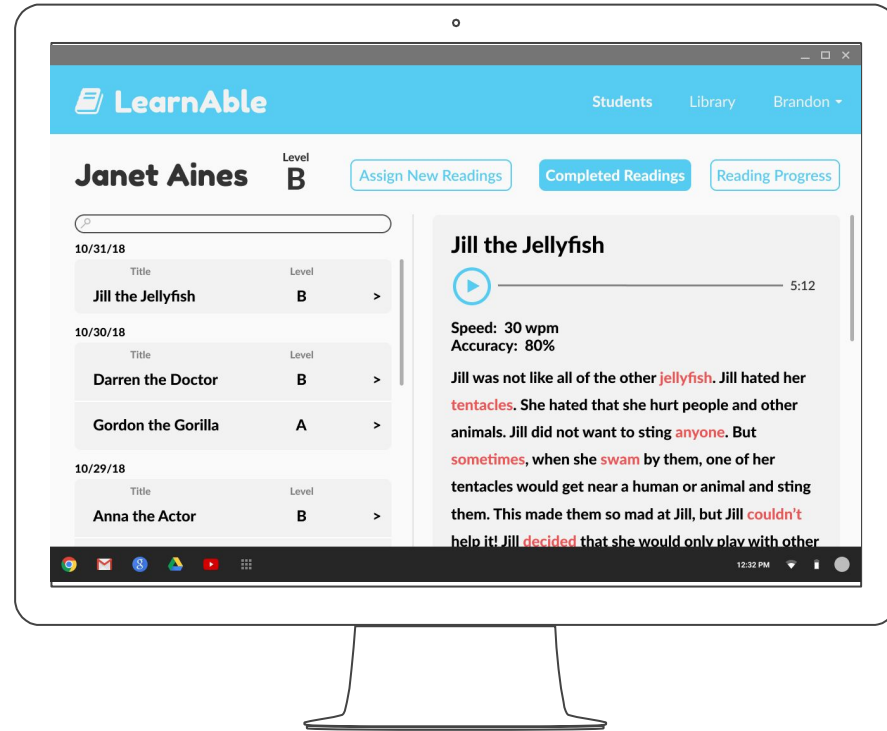
Teacher views a list of the student's past completed readings.





Task 1

Monitor reading progress remotely

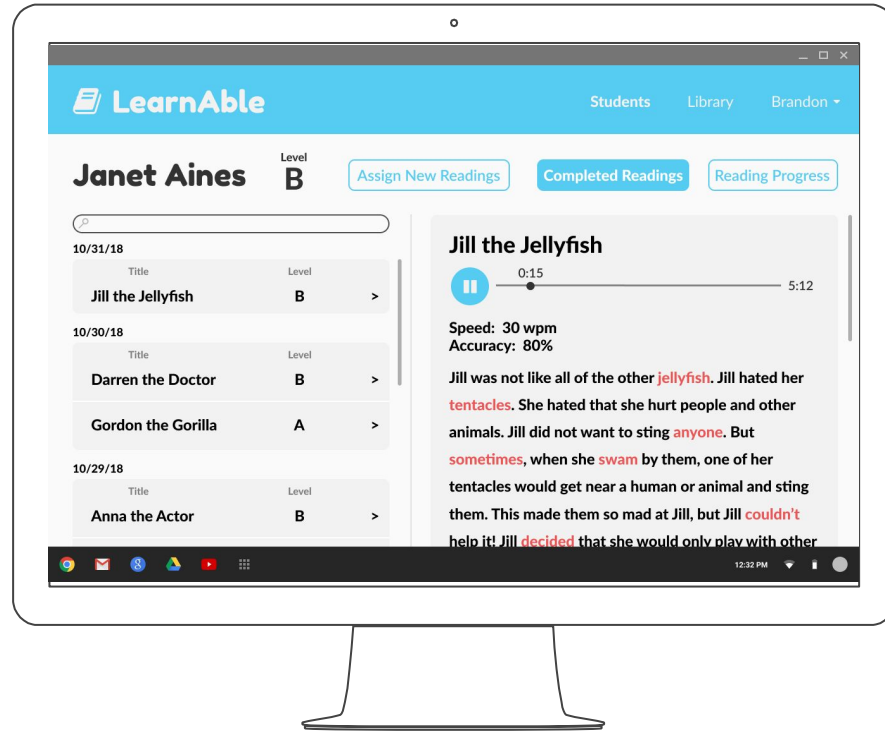


Teacher selects a completed reading to view in detail. Highlighted words denote inaccurate reading.



Task 1

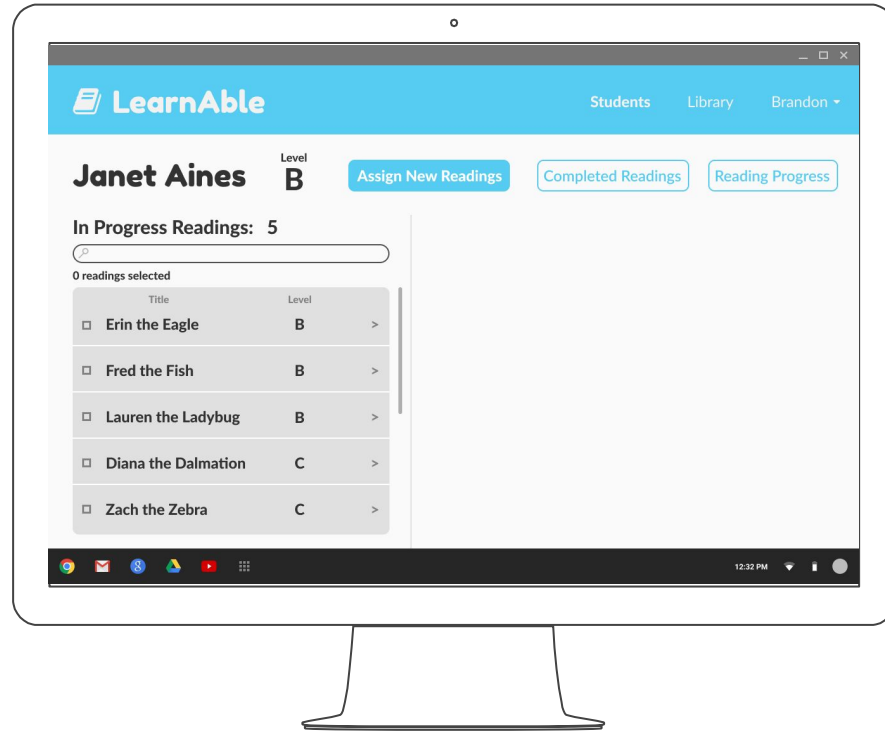
Monitor reading progress remotely



Teacher listens to student's recorded audio.

Task 2

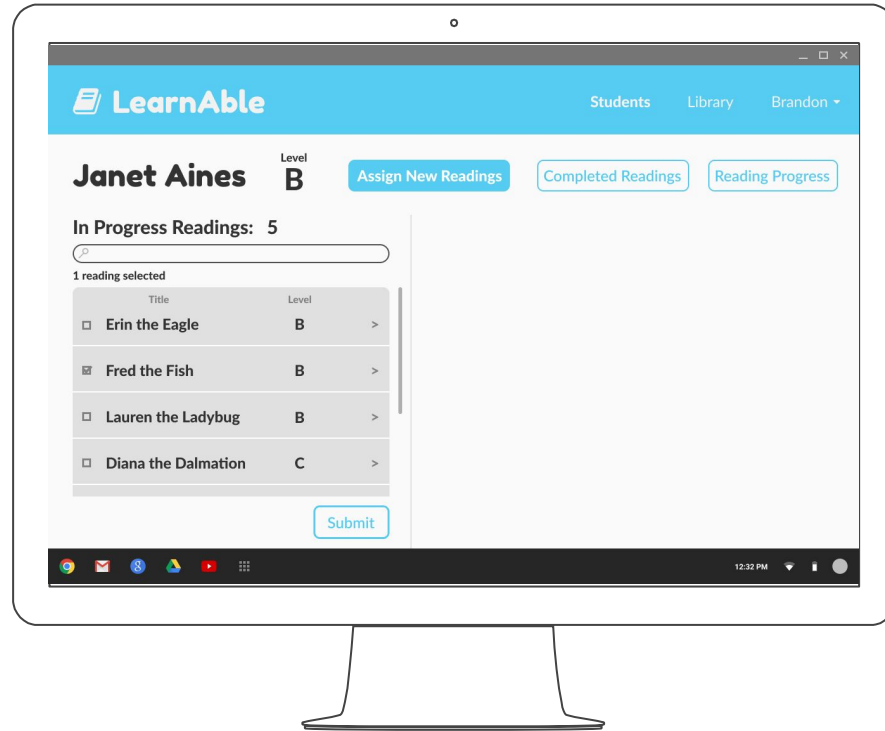
Assign readings personalized to the student



Teacher views list of readings that match student's reading level & interests.

Task 2

Assign readings personalized to the student



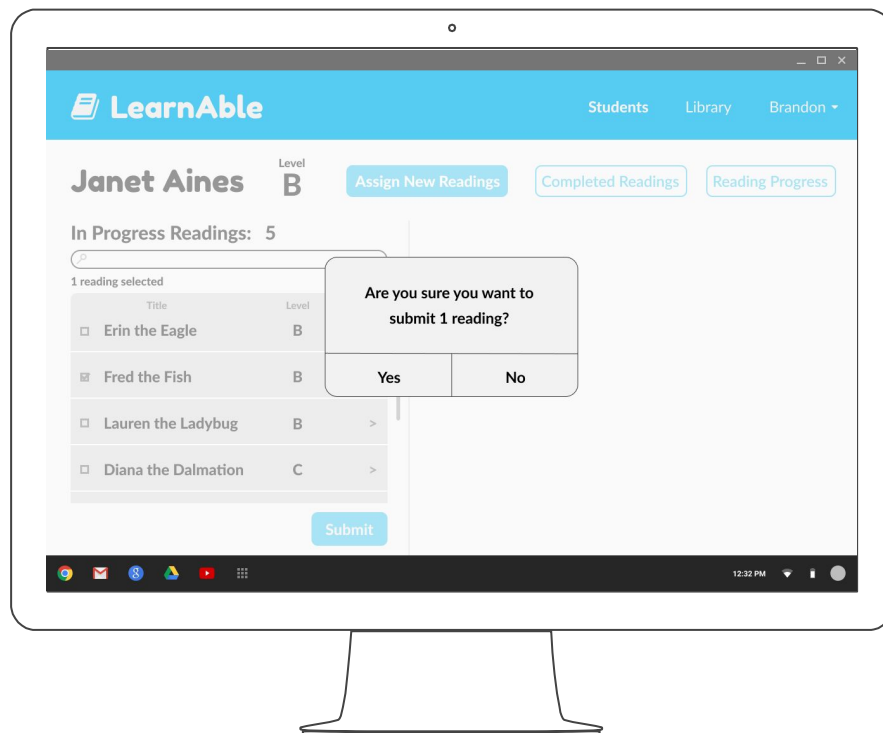
Teacher selects reading and submits to student.





Task 2

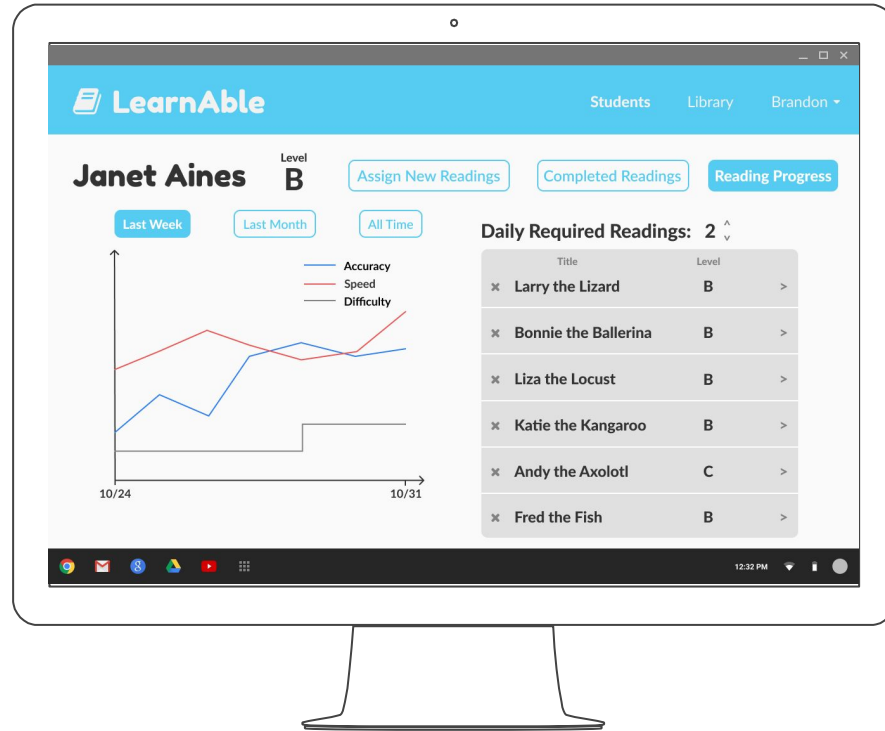
Assign readings personalized to the student



Teacher confirms their submission.

Task 2

Assign readings personalized to the student



Teacher views updated list of current readings.



Summary

- **Narrowing & clarifying** our problem and tasks produces better solutions
- Heuristic evaluations and usability tests each have their **advantages** and **disadvantages**
 - Both are crucial to **improving** the design



Thanks!

Any questions?