

# Microsoft OneNote Collaboration

Iman Yusuf, Franklin Huynh, Khyree Watson, Niat Emnetu

June 2020

ERIC GARNER JOHN CRAWFORD III MICHAEL BROWN EZELL FORD DANTE PARKER MICHELLE CUSSEAU LAQUAN MCDONALD FRANK SMART JERAME REID

GEORGE MANN TANISHA ANDERSON AKAI GURLEY TAMIR RICE RUMAIN BRISBON MATTHEW AJIBADE NATASHA MCKENNA TONY ROBINSON ANTHONY HILL

ALEXIA CHRISTIAN BRENDON GLENN MYA HALL VICTOR MANUEL LAROSA PHILLIP WHITE ERIC HARRIS WALTER SCOTT WILLIAM CHAPMAN II FREDDIE BLUE

JONATHAN SANDERS JOSEPH MANN SALVADO ELLSWOOD SANDRA BLAND ALBERT JOSEPH DAVIS DARRIUS STEWART BILLY RAY DAVIS SAMUEL DUBOSE

MICHAEL SABBIE BRIAN KEITH DAY CHRISTIAN TAYLOR TROY ROBINSON ASSHAMS PHAROAH MANLEY FELIX KUMI KEITH HARRISON MCLEOD JUNIOR PROSPER

PATERSON BROWN DOMINIC HUTCHINSON ANTHONY ASHFORD ALONZO SMITH LAMONTEZ JONES TYREE CRAWFORD INDIA KAGER LA'VANTE BIGGS JAMAR CLARK

NATHANIEL HARRIS PICKETT BENNI LEE TIGNOR

BLACK LIVES MATTER.

MICHAEL LEE MARSHALL RICHARD PERKINS MIGUEL ESPINAL

BETTIE JONES QUINTONIO LEGRIER KEITH CHILDRESS JR. Rest in **POWER** to the countless JANET WILSON MICHAEL NOEL KEVIN MATTHEWS

DAVID JOSEPH CALIN ROQUEMORE DYZHAWN PERKINS Black lives lost to police brutality. RANDY NELSON ANTRONIE SCOTT WENDELL CELESTINE

CHRISTOPHER DAVIS MARCO LOUD PETER GAINES TORREY ROBINSON KEVIN HICKS MARY TRUXILLO DEMARCUS SEMER WILLIE TILLMAN TERRILL THOMAS

PHILANDO CASTILE TERENCE CRUTCHER ALTERIA WOODS AARON BAILEY BOTHAM JEAN SYLVILLE SMITH DARRIUS ROBINSON ALTON STERLING PAUL O'NEAL

JORDAN EDWARDS ANTON ROSE II PAMELA TURNER RONELL FOSTER DOMINIQUE CLAYTON ATATIANA JEFFERSON CHRISTOPHER WHITEFIELD STEPHON CLARK

CHRISTOPHER MCCORVEY ERIC REASON MICHAEL LORENZO DEAN AHMED ARBERY BREONNA TAYLOR GEORGE FLOYD MANUEL ELLIS JAMAR ROBINSON TONY MCDA

LET US ALSO GIVE SPACE TO THE NAMES THAT ARE NOT ACCOUNTED FOR HERE

# Meet the Team



Iman Yusuf



Franklin Huynh



Khyree Watson



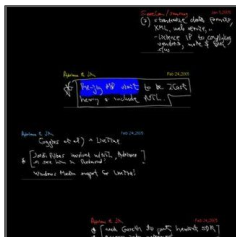
Niat Emnetu

# Introduction to the challenge

“As the types and volume of notes increases, users need flexible ways to navigate and organize large sets of notes they created alone or in collaboration. Explore new organizing experiences or views for various kinds of notes, both loose notes and in collections.”

- 2020 Microsoft Design Challenge

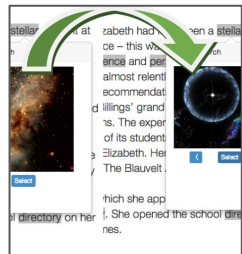
# What research and immersion can we do online?



Deployed version of display

## Peripheral display of digital handwritten notes

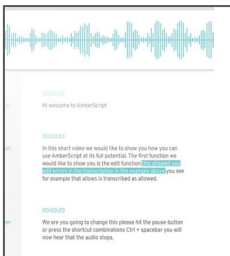
Note taking as an action serves two purposes: encoding and recalling. In many cases, people lack the ability to recall information once encoding. The research reveals users seldom refer back to their notes, which can be useful for our project.



PicRemarkable selection tool

## Supporting second language reading with picture note-taking

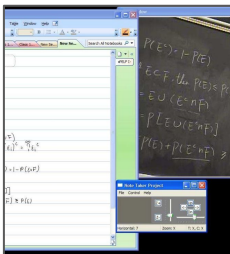
Second language reading comprehension is, of course, difficult for those who have limited skills in reading in a second language. This article goes into depth about how picture note taking supports this and allows more people to visually understand notes.



Audio transcription

## Improving mobile support for informal note-taking

In mobile phone calls, audio recognition technology has been used to enhance note-taking. Since note-taking can be used for immediate use, temporary storage, or prospective memory aid, there are also challenges in how we can support these use cases and supporting organizing experiences in different mediums (laptop, phone, etc.)



CUBiC Note-taker interface

## Note-taker: enabling students who are legally blind to take notes in class

It is important to think inclusively and recognize all our user groups. Students who are legally blind need alternative and flexible ways to navigate through notes and organize them so they could easily recall. They typically also might have more collaboration in note-taking than students who are not legally blind.

# Agenda

Phase 1: Empathize

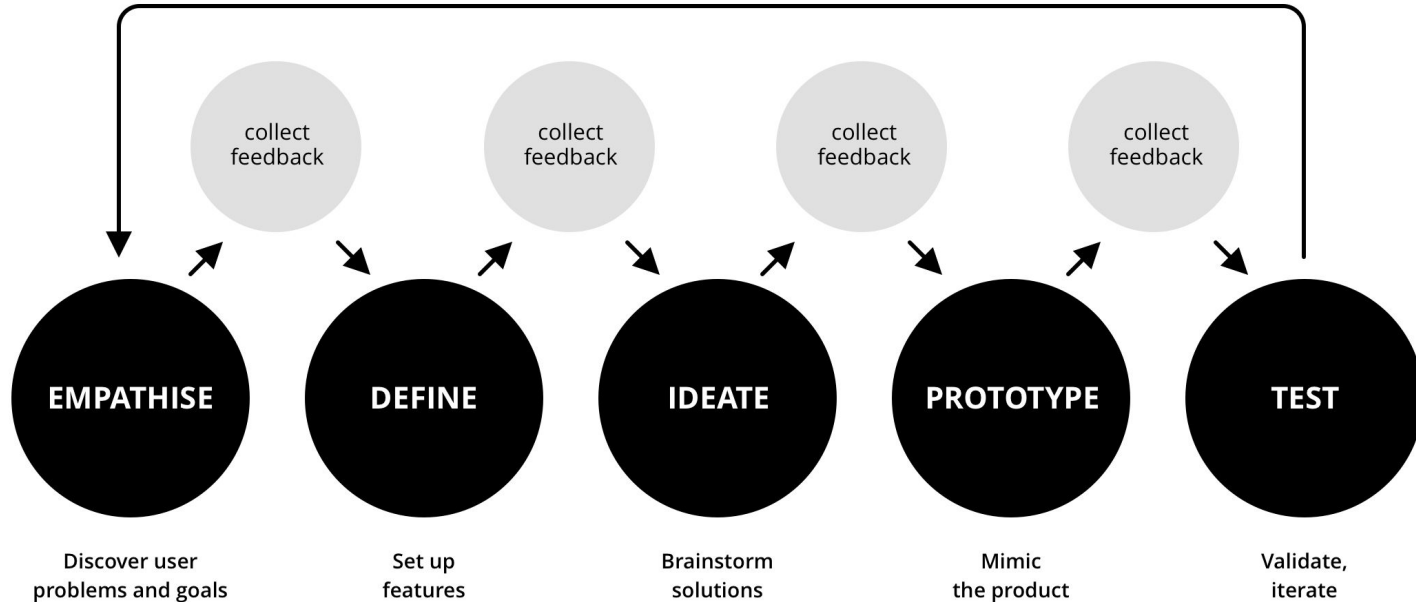
Phase 2: Define

Phase 3: Ideate

Phase 4: Prototype

Phase 5: Test

# Utilizing the **design thinking** framework



# Sneak peak





# Phase 1: Empathize

How might we...

Target Audience

Product Audit

Competitive Analysis

Interviews

Surveys

# How might we reframe the prompt to propel our project?

“Design an experience that allows flexible ways for users to navigate and organize large sets of notes they created alone or in collaboration with others.”

## How might we...

**flexible:** enable more than one view or experience

**navigate:** make it easy for users to find and use their notes

**organize:** enable users to easily arrange and store notes

**utilizing collaborative notes...**

# Who are the **target audience(s)** that we are designing with?

## Students

Need flexible ways to study on the go across various devices, go beyond text notes, and easily share notes for group work in a time-constrained setting.

## Working Professionals

Need tool for general business use, allowing mobile workers to chat, share notes, ideas and get updates on current projects from co-workers.

OneNote is especially beneficial for businesses with multiple locations who need to coordinate on projects, manage projects, or organize company-wide information & resources in one place.

# What is the **usability standard** of OneNote and where can the product improve?

**We utilized Jakob Nielsen's usability heuristics** to identify areas of opportunity where usability can improve as well as recognizing aspects that are working well in order to maintain and exceed this standard.




## What works well

- The current viewing and organizational experience on mobile uses concepts familiar to the user, rather than system-oriented terms. Finding more specific notes shows more details, which is logical.
- The experience is consistent and standard. List view is a standard, with words, situations, and actions meaning the same thing and follow platform conventions in all contexts.
- Minimal and aesthetic with words and icons to aid recall when performing note arrangements and searches.

## Opportunities

- Viewing and organization experience suffers most from flexibility and ease of use in finding specific notes.
- Our biggest opportunity is to create an experience where users will have the flexibility to view notes from searches that accounts for different context, scales, and mental models.
- Other opportunities include more advanced searching capabilities to allow users to find particular notes.

# How can **we learn from others** in the same opportunity space?

Company	Real-time Collaboration	Prices	Integration	Cross platform synching	Notes
	YES	Free	Only Google Drive	YES	Difficult to organize because lacks option to have multiple notebooks  Voice notes, sticky notes
	NO	Free Bus. account - \$14.99/m	YES	YES	Uses tags to organize note pages  No real-time collaboration
	YES	Free Prof. account - \$9.99/m	YES	YES	Supports all file types

# Conducting **interviews** to contextualize and understand our users.

**6 participants**; 3 students;  
3 working professionals

Ages 21-24

Criteria: Frequent digital  
note-taking users (3+  
times a week)

## **Product**

OneNote [P1, P2, P5],

Evernote [P3, P6]

Google Document [P2, P3, P4]

## **Features**

"That's why I love Google docs - because of  
comments" [P2]

## **Media Type**

Text, pictures & graph [P1, P5]

## **Process: Search**

"Searching through list view is easier than the Search  
bar" [P3]

## **Process: Organize**

"Evernote organizes notes by date and title." [P3, P6]

## **Values**

"Collaboration." [P4, P6]

"Simple not too complex." [P6]

"Easily accessible notes." [P2, P5]

## **Frustrations**

"It's frustrating when editing older notes - it reorders it." [P3]

"I want a smarter search." [P1]

# Validating patterns by **surveying** users over larger numbers

## 48 participants

Criteria: Students at a College or University and working professionals who use digital note taking applications at least 3 times a week

### Students

**90%** of users value accessibility and ease when choosing a note-taking application

- Editing/Customization tools (2nd)
- Collaborative & Device Integration (3rd)

**81%** of users could find notes more easily if they could customize layout of notes

### Working Professionals

**90%** of users value accessibility and ease when choosing a note-taking application

- Collaborative Capabilities (2nd)
- Device Integration (3rd)

**71%** of users could find notes more easily if they could customize layout of notes

## Phase 2: Define

Personas

Journey Mapping

Design Requirements



# Identifying the user's needs, goals, and pain points through personas



## FACTS

- Age: 21
- Biology student in college
- Access notes between laptop and tablet
- Product: OneNote, Notability

## GOALS

Collectively reviewing lecture content to study for tests

## NEEDS

- Store and take different types of notes
- Customize and organize content
- Recall and review specific topics and information

## PAIN POINTS

Difficulty searching content within different media types

## STORY

Biology student. She has a lot of lectures and three tests in the next coming weeks. Before the lecture, she downloads the PowerPoint slides and converts them to pdf in order to transfer and view on OneNote. During class, she has her slides open and simultaneously creates text or digital handwritten notes as the professor is lecturing. She has notebooks and sections to stay organized with frequent lectures throughout the week. Each lecture constitutes a new page of notes. Every note is organized within corresponding sections that are based on different tests she will take. When she goes home to review her notes, she usually uses keyboard navigations to find specific information for certain topics she wants to review. She finds it frustrating that she is unable to search for her handwritten notes or words within the pdf documents she attached. As a result, she has to take time to manually scroll through her lecture slides to find the information she needs, which takes time away from studying. After scrolling through multiple slides, she finally finds the content she needs.



## FACTS

- Age: 29
- Technology consultant
- Access notes between laptop and phone
- Product: Google Docs, OneNote

## GOALS

Being prepared and organized for daily and weekly meetings

## NEEDS

- High visibility of notes between collaborators
- Manage multiple projects concurrently
- Review previous information from meetings and conversations

## PAIN POINTS

Difficulty viewing collection of notes within a project  
• Lack of personalized organization between different collaborators

## STORY

A technology consultant at a local startup. He attends many meetings daily and works collaboratively with others throughout the day. During meetings, he takes notes via his laptop but will sometimes add onto them during off-work hours on his phone. His notes usually consist of requirements for products, to-do lists, or important announcements. Usually, he prefers to have one continuous document for each project so that there are fewer folders to search through during time-sensitive meetings. With longer projects, this document can easily be many pages long. As a result, viewing his collection of notes within a project can be difficult. He currently organizes his notes within each project by creating date sections in the document. To avoid confusing his coworkers, he tries not to organize much more than that. However, it is frustrating when he can't remember which note corresponds to which date. In those instances, the lack of additional organizational techniques results in having to rely heavily on keyboard navigation searches. After manually querying the document for particular keywords, sentences, or scrolling across the entire document, he is able to find relevant information for his meeting.

Student

Working Professional

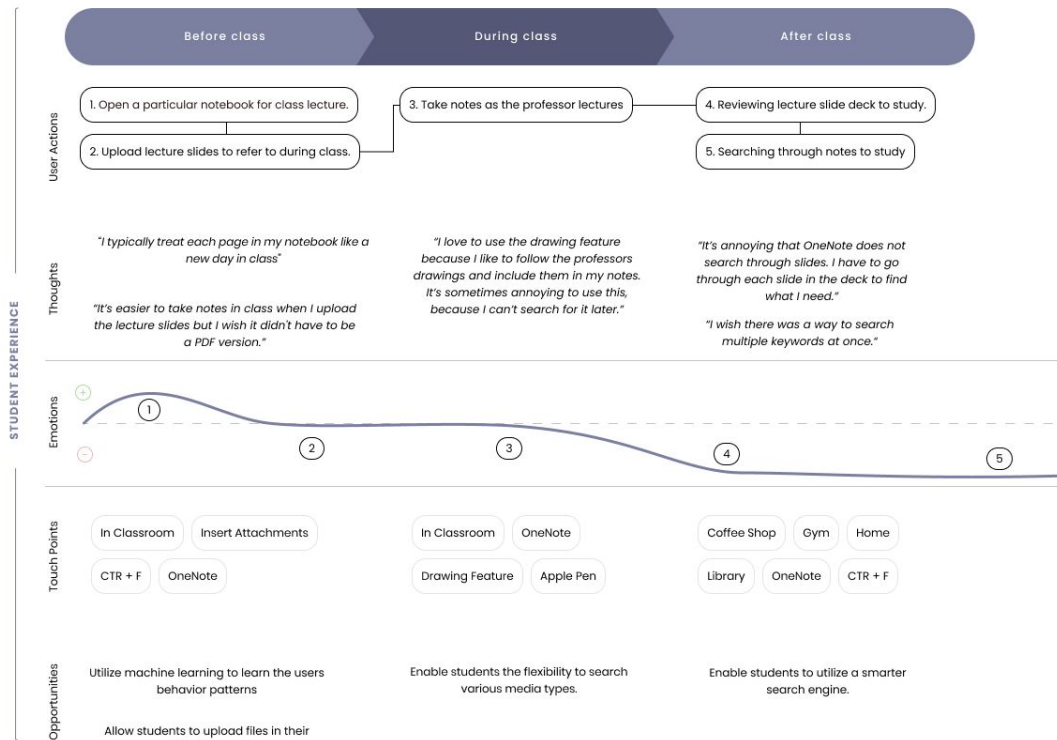
# What is the **student's** journey while using digital note-taking platforms?



Gabrielle U.

Biology Student

"My notes are my lifeline in my academic career as they are super important in each of my classes"



# What is the **working professional's** journey while using digital note-taking platforms?

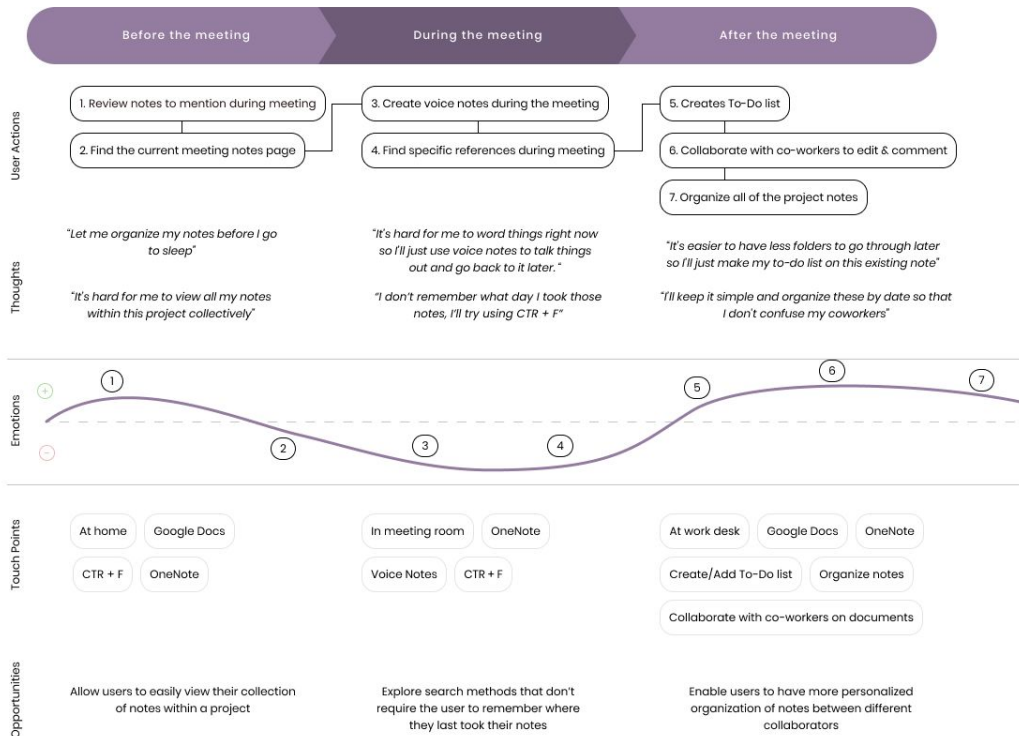


Michael B.

Technology Consultant

"Keeping track of my notes help me lead agile implementations across various clients and programs"

WORKING PROFESSIONAL EXPERIENCE



# Defining **design requirements** within our research

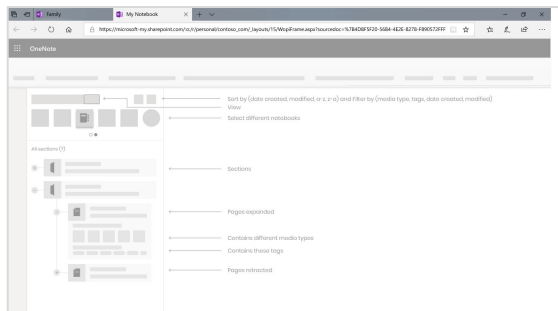
Opportunity space	Context
Flexibility of viewing options	Depending on collection sizes, users need flexible ways to view their notes, whether that be grid, list, timeline, etc.
Cross platform and device consistency	Users cannot perform certain actions within different platforms or devices. EX: Users can move/copy notebooks on Desktop and Mobile but are unable to do so Online.
Provide deeper organization features that enhance the search	Searching for notes requires a lot of mental recollection on the users end.
Organizational collaboration	Note-taking doubles as a workspace. Users need efficient ways to work, communicate, and organize collaborative notes.

# Phase 3: Ideate

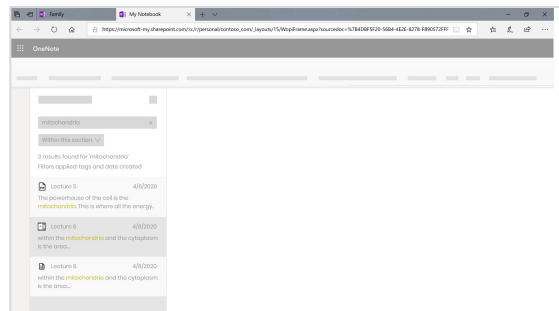
Sketches

Wireframes

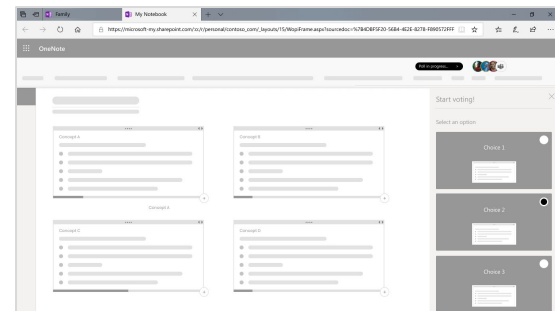
# Developing our initial areas of focus through wireframes



Viewing options



Enhanced search



Collaboration

\*these wireframes shown are in no way exhaustive of our explorations

# Assessing impact and effort to **decide on a direction**

## Collaboration – Rationale

- Given the changes from COVID-19, online collaborative spaces will become more demanding and common
- **Research:** Organization within OneNote has traditionally come from the perspective of individual note-taking rather than collaborative note-taking.
  - Huge opportunity in identifying the value that our product can provide to users within integrating the note-taking and workspace environment
- **Competitive Analysis:** OneNote can benefit from creating more of a workspace for its users rather than just a space for note-taking
  - **Interviews:** The work that users complete for work or school become their notes.
  - Ex: Google docs is used as a workspace/productivity application but doubles as a note-taking one as well

# Reframing our design question to address organizational collaboration

- **Design Question**
  - How might we enable users to **organize** large sets of notes they create in **collaboration** with others?
- **Define: Organize**
  - enable users to collect, arrange, and make decisions between multiple ideas and thoughts
- **Define: Collaborate**
  - streamline the process of two or more people or organizations working together to complete a task or achieve a goal



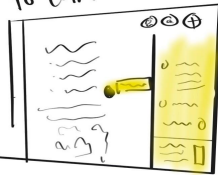
# Continued ideation for collaboration through sketches

#format your notes to your preference



spec progress tasks meetings (outline timeline grid)

#Comment & Respond to collaborative notes



integration of outlook?

Integration w/ teams ⑦

#vote and respond to ideas (organize thoughts)



#collect notes/ information from others

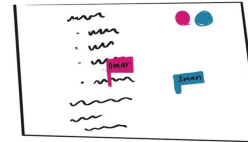


Ⓐ

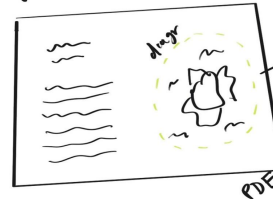


Collaboration ①

#work together in real time

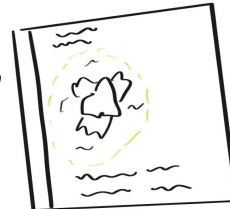
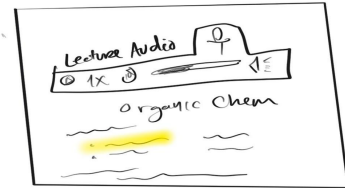


#clip & copy different parts of your notes



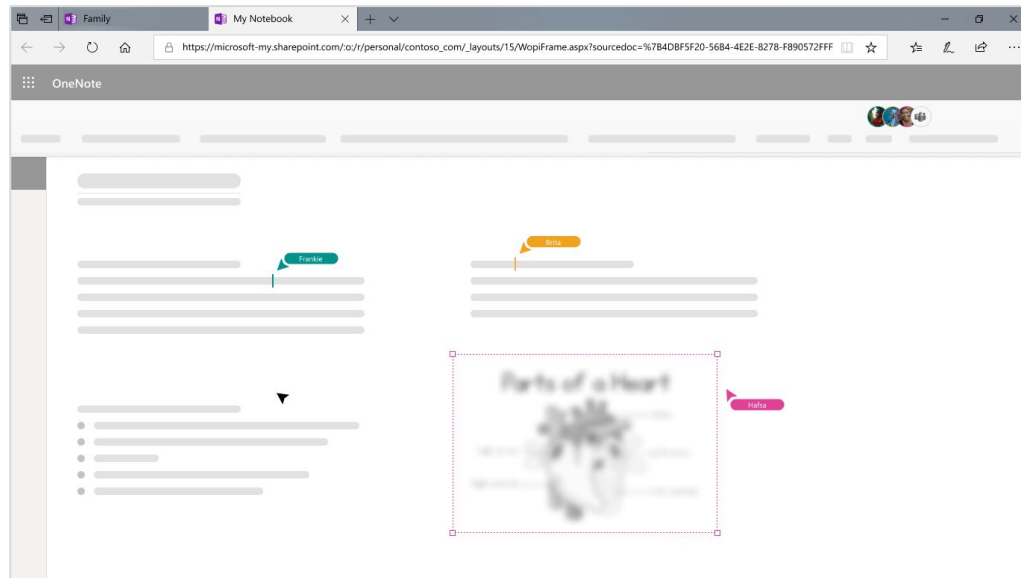
PDF

#capture and recall different media types simultaneously



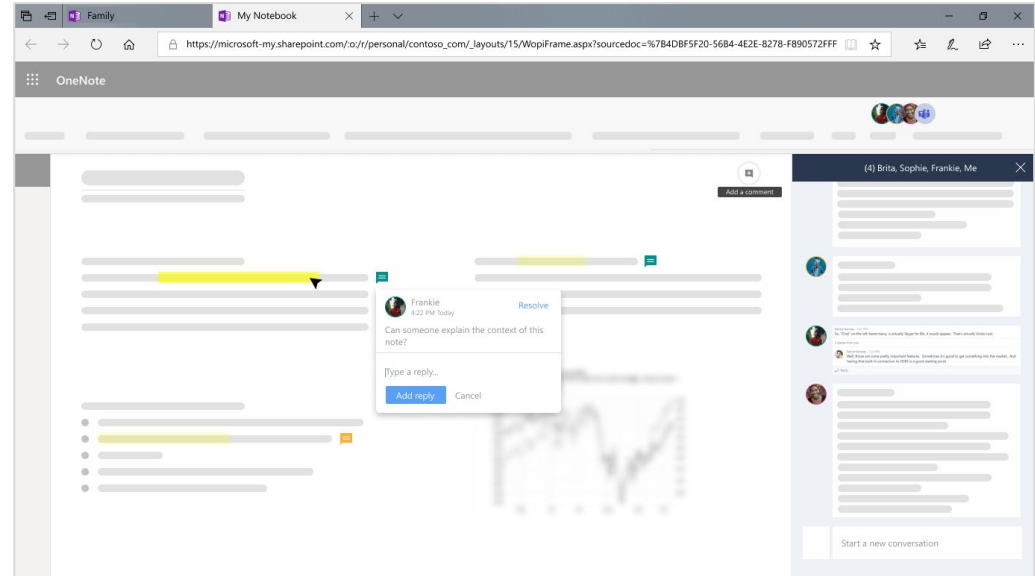
# Low Fidelity – takes notes together in real time

- From our interviews and surveys, many participants **used other note-taking platforms** that have real-time collaboration features **in addition to OneNote**.
- This was an opportunity for us to **expand the product** and allow users to take notes in collaborative environments and contexts, which is something that they valued greatly.



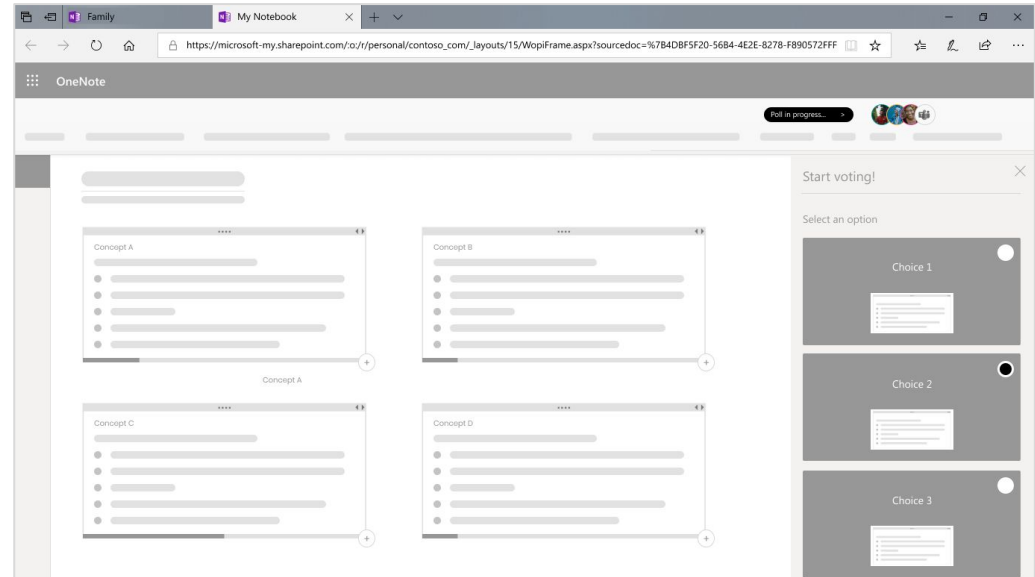
# Low Fidelity – communicate with Teams integration

- From the interviews and surveys we conducted, users shared their constant **need to communicate between teams when working on projects**, especially the working professionals.
- Utilizing Microsoft Teams, we developed a way for users to access a chat room feature while working on collaborative notes
- Also, participants mentioned the **need to comment within documents**, which we integrated within our low-fidelity wireframes.



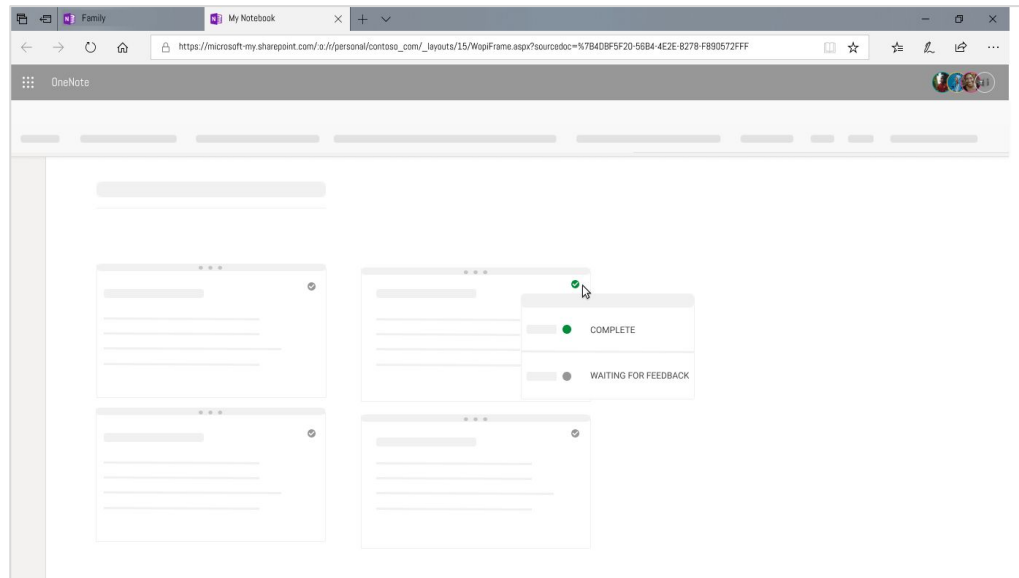
# Low Fidelity – make decisions with Forms integration

- From our interviews, **organizing different ideas** within notes in a collaborative setting can oftentimes be **difficult and confusing**
- Utilizing Microsoft Forms, we have an opportunity to integrate it's features to **enable users on OneNote to make quick decisions together** within a note document



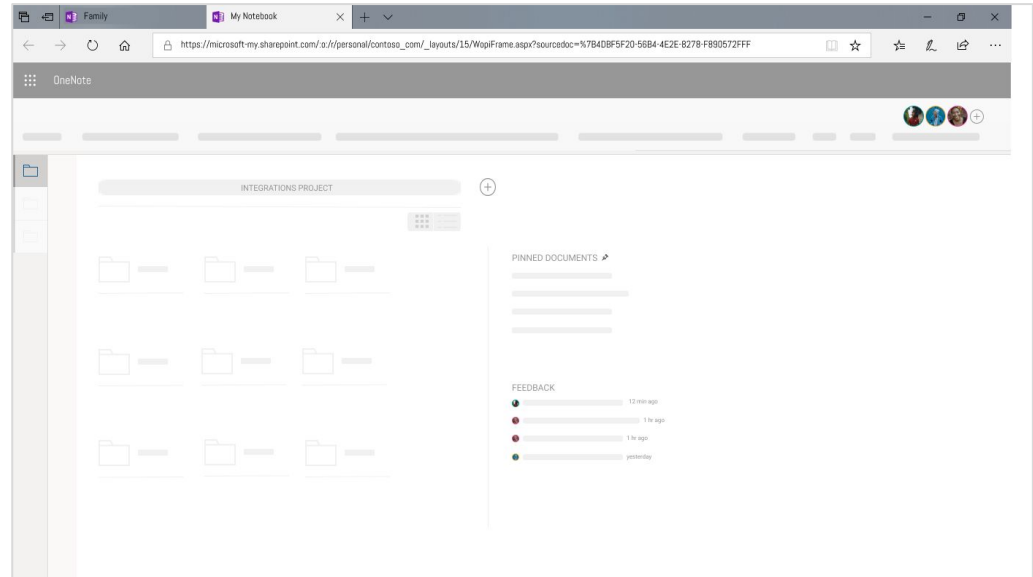
# Low Fidelity – label content with status

- While working on projects, many of the working professionals shared their frustrations of **not knowing the status of collaborative notes**
- We designed a feature in which team members can mark buckets of notes as complete or incomplete so that everyone will **be informed about the status of the content.**



# Low Fidelity – stay up to date with a collaborative dashboard

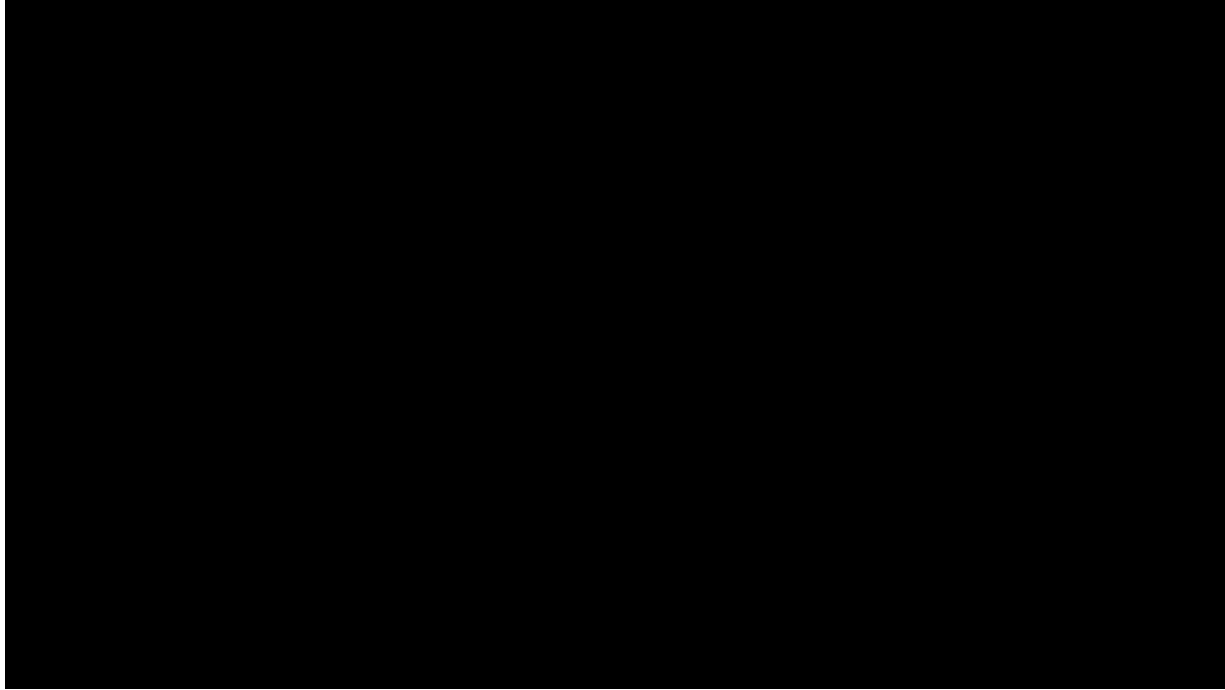
- Depending on various use cases, mental models, and scales of notes, **users need flexible ways to navigate and view their collection of notes**
- Within OneNote online specifically, users can navigate their notes through a dashboard
- The dashboard has a huge **opportunity to show users more valuable information** regarding their shared notes (such as mentions and pinned notes) other than which notebook has been shared



# Phase 4: Prototype

Interactive prototypes

# Dashboard Navigation

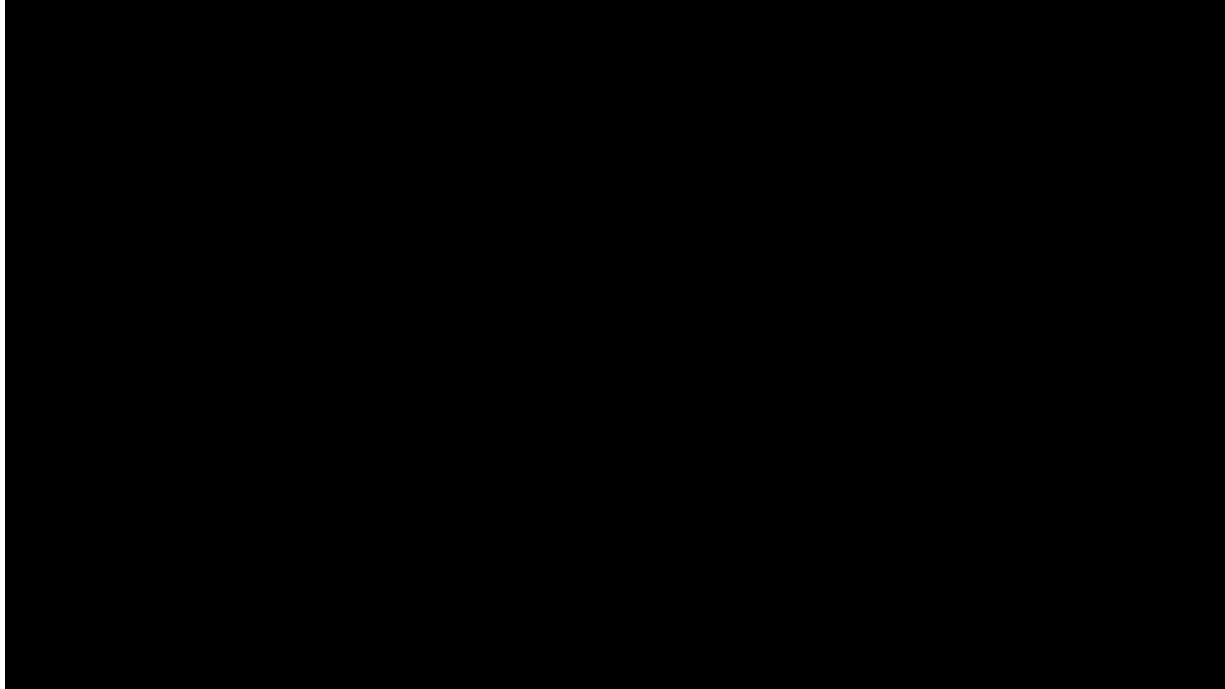




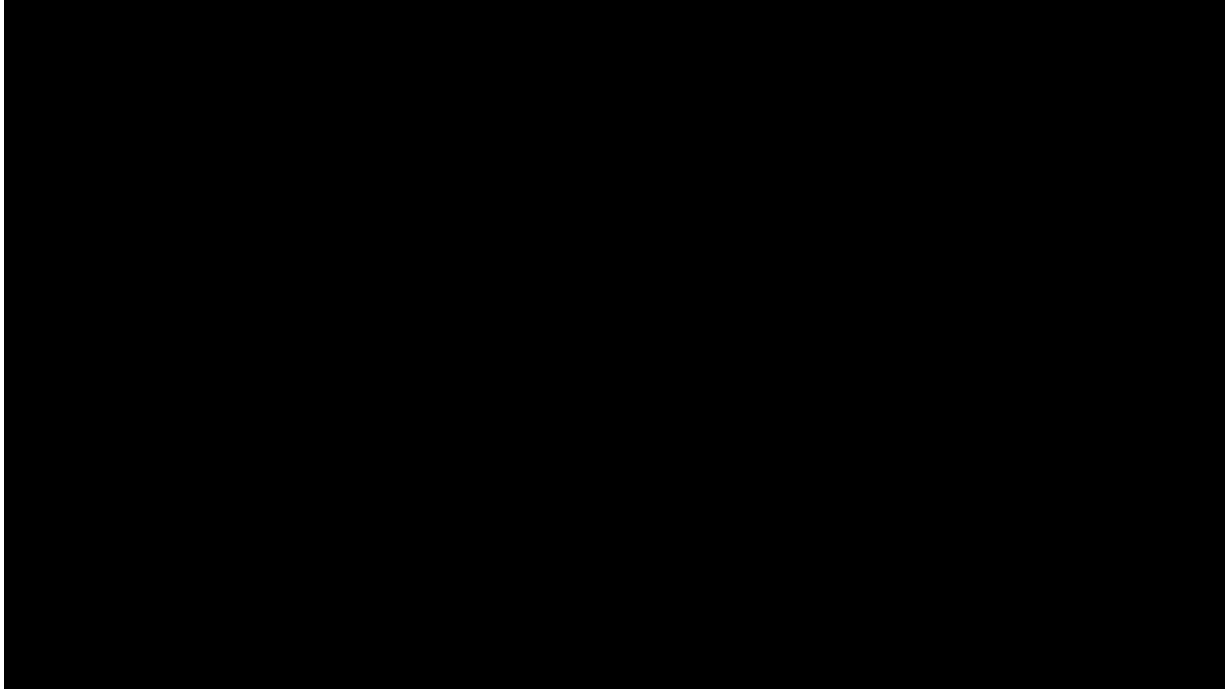
# Forms Integration – Creating a form



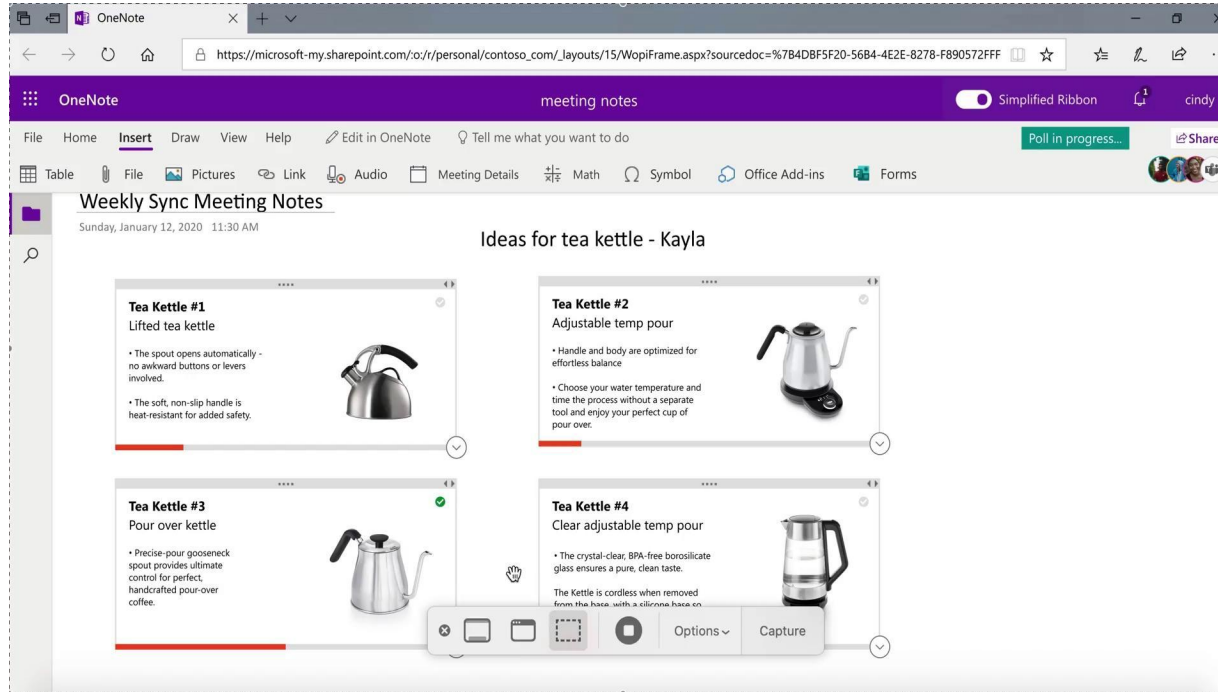
# **Teams Integration – communicate and comment**



# Forms Integration – voting on a form



# Marking status – complete/incomplete



# Phase 5: Test

Usability studies

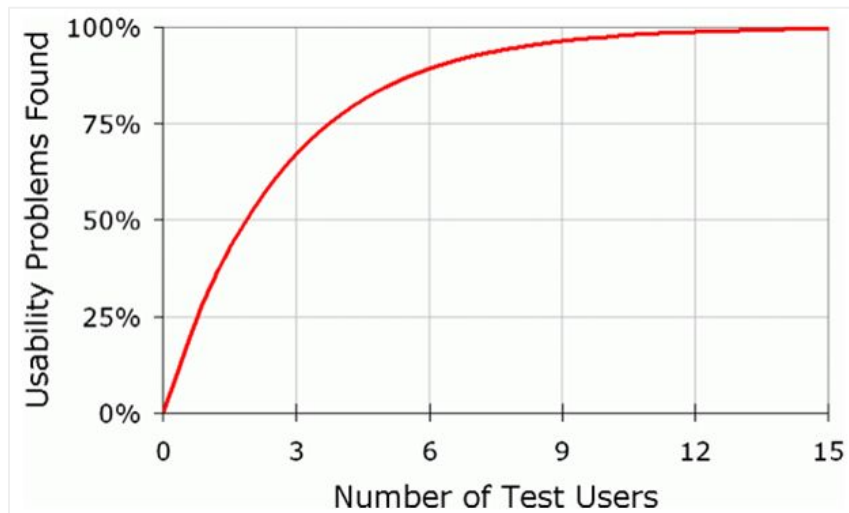
Accessibility blue lines

Final designs

# How can we get the most out of usability testing?

6 Task-based scenarios for the following collaborative features:

- Dashboard navigation
- Creating a voting form
- Communicating through Teams integration
- Voting on a poll
- Viewing poll details
- Marking complete/incomplete



# How did users **feel** when performing the tasks?

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10
<b>Perceived Success Rate</b>	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)
<b>Actual Success Rate</b>	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10
<b>Confidence Rating (AVG)</b>	5	4.5	4.2	4.6	3.4	4.4	4.9	4.4	4.7	4.8

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10
<b>Ease Rating (AVG)</b>	5	4.4	4.6	4.6	4.1	4.5	5	4.7	4.84	5

# What were users **saying** during the walkthroughs?

“It would be nice to have a blurb to say list or grid view when I’m hovering.”

- **Participant 1**

“My first instinct was to look at the top menu because that is where you can insert other things”

- **Participant 2**

“Very pleased with all the details of the notes content (members, last edited, etc)”

- **Participant 3**

“Would be nice to see the count on the progress bars for the containers so that it could save me a click”

- **Participant 4**

“I liked the comment icon, it helped me recognize that a response was made about a note”

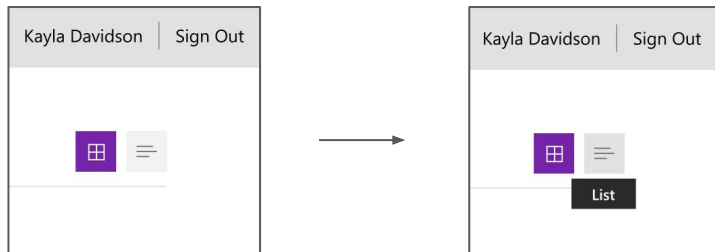
- **Participant 5**



# Overall takeaways from qualitative and quantitative usability study results

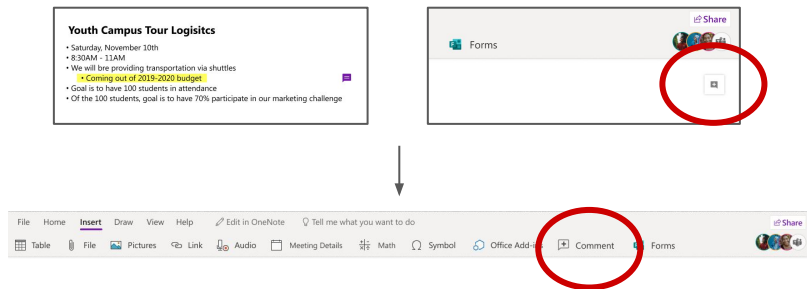
## Users want to confirm their viewing selections

Participants expressed their concern with uncertainty on which viewing option they are about to see. Expressed wanting to have text to confirm their expectations on the button.



## Users want consistent and familiar action placements

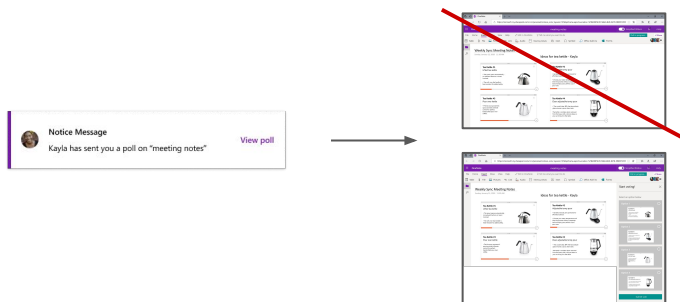
Most participants first looked at the ribbon in order to insert a comment about a note. There were Inconsistent icons regarding comments.



# Overall takeaways from qualitative and quantitative usability study results

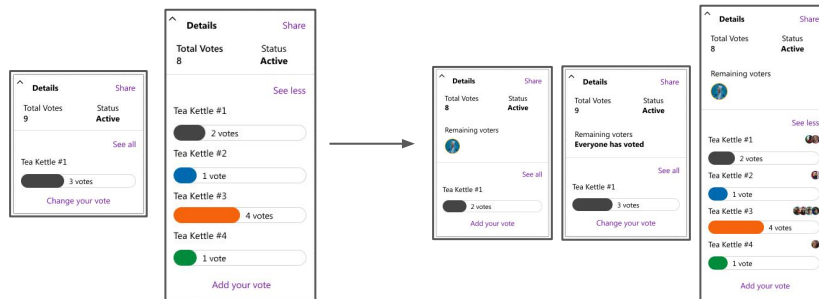
## Users want to immediate visibility of form voting

When clicking on a notification to vote on a form, participants wanted immediate visibility of where to select and submit a vote.

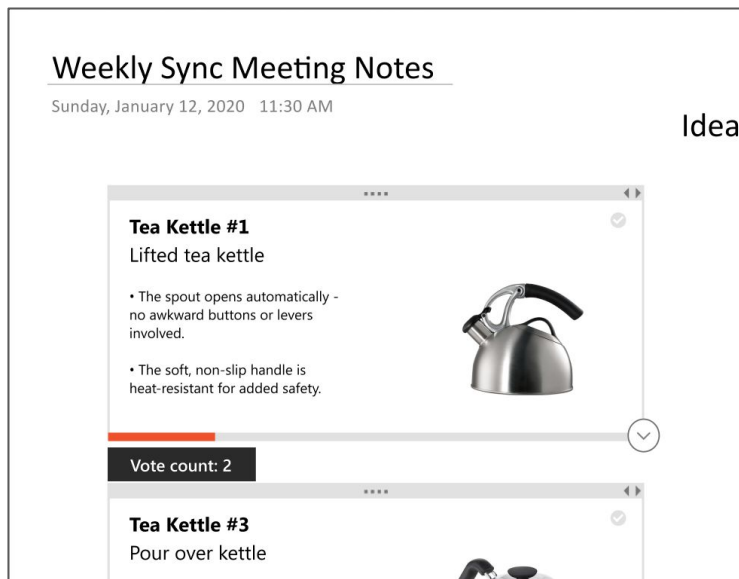


## Users want to see member contribution when voting

Many of the participants mentioned their desire to see who, specifically, voted on each option and who hasn't voted.



# Overall takeaways from qualitative and quantitative usability study results

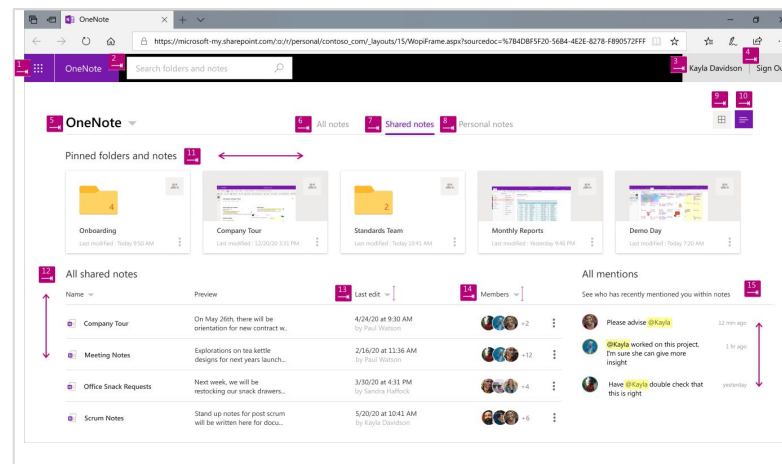
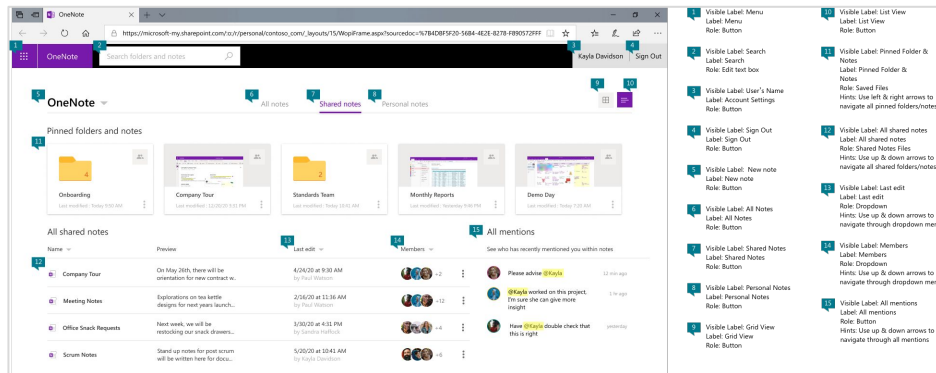


## Users want to see exact vote count from progress bar

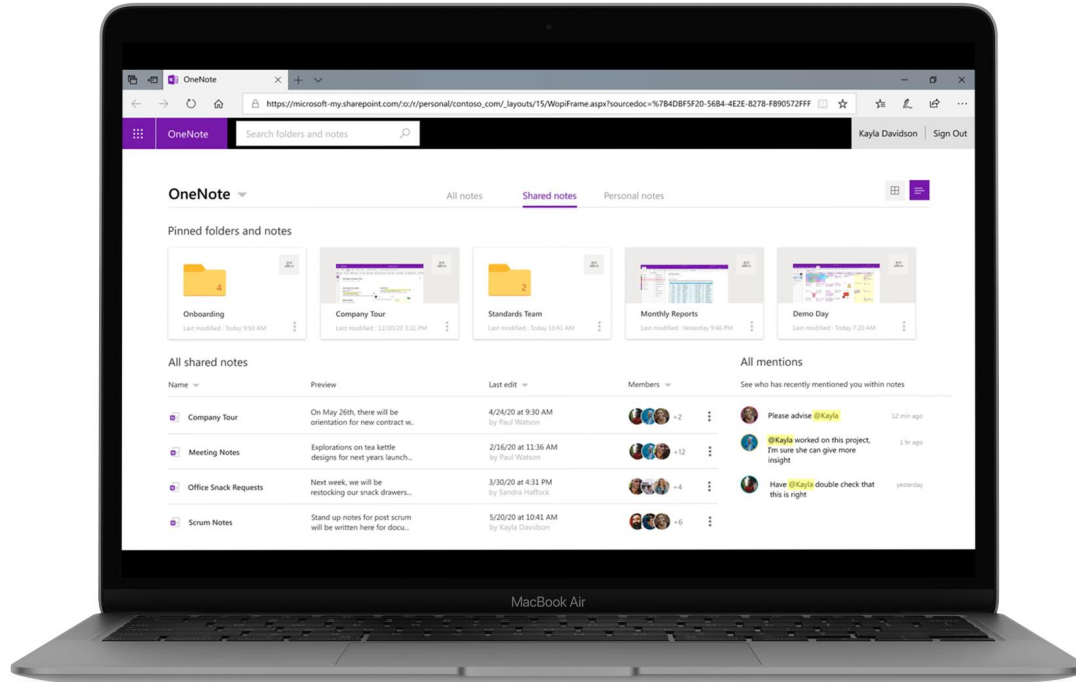
All participants were able to recognize the functionality of the progress bar but most of them struggled to quickly confirm the number of votes for each option rather than gauging the exact number from the progress bar or having to expand poll details.

# Creating accessibility blue lines to provide equivalent experiences

As designers, we have the large responsibility of making our designs accessible as we move to high-fidelity.

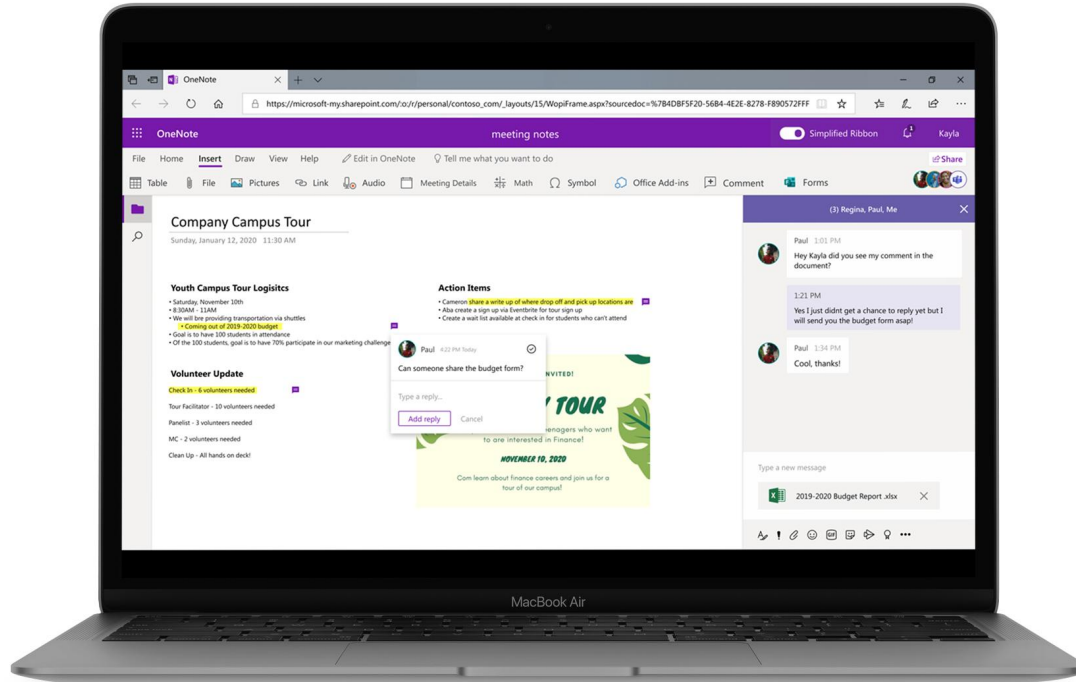


# Final Designs



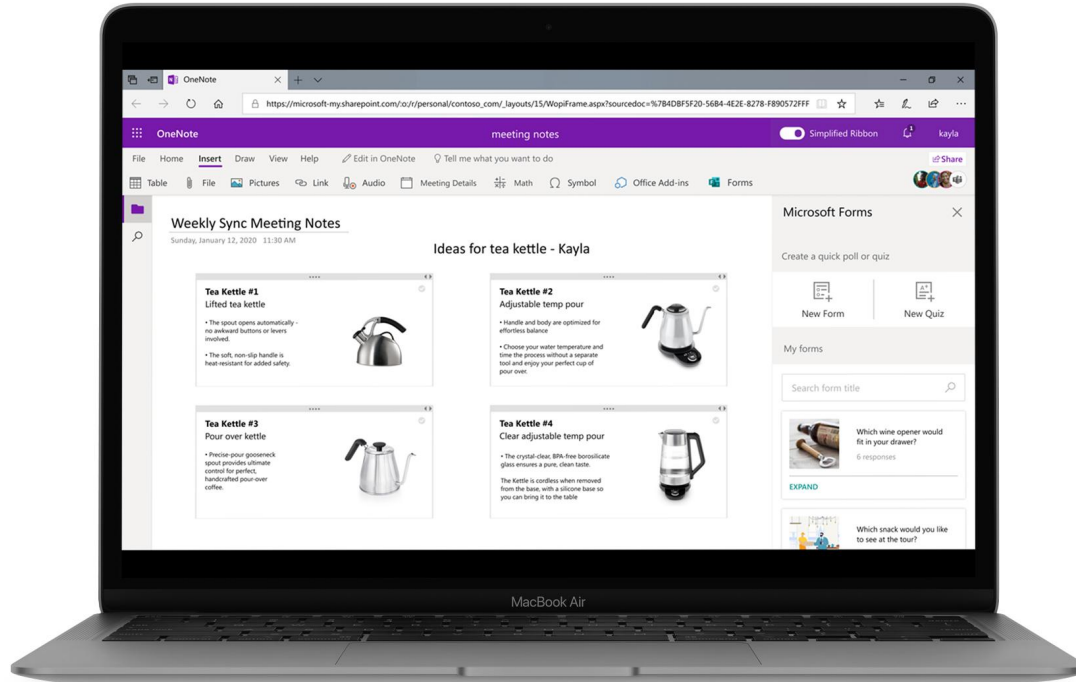
## Dashboard

# Final Designs



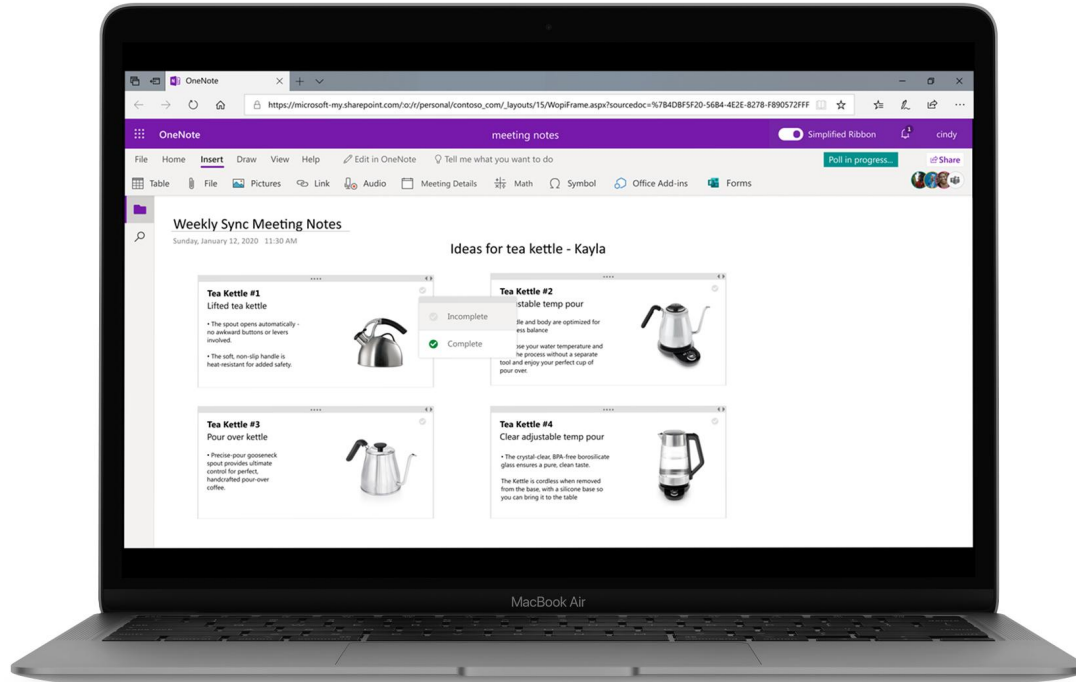
## Teams

# Final Designs



## Forms

# Final Designs



Status



# Process Recap

Phase 1: Empathize

Phase 2: Define

Phase 3: Ideate

Phase 4: Prototype

Phase 5: Test

# Reflection

## Challenges

- Due to COVID-19, the ability to connect in person was heavily compromised
- Lack of time and resources
- Accessibility was limited to the time spent on the accessibility blueprints

## With more time

- Create design explorations for organization features that enhance the search
- Have our participants from the usability tests experience the refined prototype after feedback
- Develop design explorations for mobile usage of OneNote

## Final Thoughts

- Special thanks to our amazing mentor, Mila Milam, who supported us throughout this journey
- We are truly blessed to have been given this opportunity to contribute towards the vision of OneNote

# Thank you for reading!

HCDE 493 Capstone

Iman Yusuf, Franklin Huynh, Khyree Watson, Niat Emnetu

June 2020

