2018

# Research Report

The Impact of Mobile Device Usability Guidelines on the Design of Help Documentation for Evernote's iOS Application

Prepared for Evernote Corporation

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# Abstract

The purpose of this project is to show how to develop research-based usability criteria and how to apply them to a specific product, Evernote's iOS mobile help tool. Initial research involved analyzing current usability research publications by performing the following steps: coding each sample for most frequent usability criteria, clarifying and simplifying each entry, reorganizing the content in each code for frequency, and combining each topic in the new organizational structure to create a single set of research-based usability guidelines. The new guidelines were used to evaluate *Getting Started* and *Getting Started Guide* from the perspective of a non-business, English-speaking, novice iOS user. The final step resulted in the following list of recommendations to improve the user experience: review and adjust the navigation design, reconsider the information design to ensure that it reflects the wide variety of users and platforms, adjust the visual design to meet cultural expectations and user needs, and edit content for clarity, word choice, and grammatical style.

# Table of Contents

# List of Tables

# List of Figures

# List of Images

# Introduction

The purpose of this project is to show how to develop research-based usability criteria and how to apply them to a specific product, Evernote's iOS mobile help tool. I approached the project from the perspective that usability criteria developed from existing literature and research assists the technical communicator in becoming involved in the design of help documentation earlier in the process. This is especially important as usability testing, the primary way to gauge how usable a document is often performed after the product or document has already been designed. To apply the research-based usability criteria, I chose to evaluate a set of existing mobile help documentation belonging to the company Evernote.

Evernote is "a place for individuals and teams to capture, nurture, and share ideas in any form" (https://evernote.com/corp/). Functions of the Evernote application include creating and editing text; downloading images and articles from websites; and developing unique organizational structures. With the help of Evernote, teams can collaborate on and share documents with each other. Evernote is available online via their website, a desktop application, or a mobile device.

This report focuses on Evernote's Apple's iOS application (app) over Google's Android app for two reasons: user reviews and market share. The comparison of user reviews between Evernote's iOS app (4/5) and Evernote's Android app (4.5/5) showed that the Android app had a higher positive review score. The greater market share was also stronger for the Android operating system; see Table 1: Monthly Market Share Percentage. Because the iOS app scored lower in user reviews and has a smaller market share, it is important to improve parts of the help tool documentation from the perspective of the Evernote iOS app user.

|  | iOS operating system | Android operating system |
|---|---|---|
| May 2017 | 34% | 64.8% |
| May 2016 | 29.3% | 68.5% |
| May 2015 | 30.9% | 64.9% |
| May 2014 | 32.5% | 61.9% |
| May 2015 | 41.9% | 52% |

TABLE 1. MONTHLY MARKET SHARE PERCENTAGE (STATISTA.COM)

Accessing Evernote's help tool within the iOS app requires the user to click through multiple levels of menus starting with the *Account* section, found at the bottom right of the navigation bar (see Image 1). In the *Account* menu, the user clicks the *Support* option (see Image 2), and Evernote directs the iOS user to a new screen with five menu choices—*Help & Learning, Getting Started Guide, Evernote Tour, Submit a Support Request,* and *Activity Log (see Image 3)*. The *Evernote Tour, Submit a Support Request,* and *Activity Log* are not connected to the help tool. The *Getting Started Guide* on the iOS platform is a document by the name "Welcome to Evernote for iPhone, iPad, and iPod Touch" that is stored in the *Using Evernote* section of *Help & Learning* where it is accessible to all users.
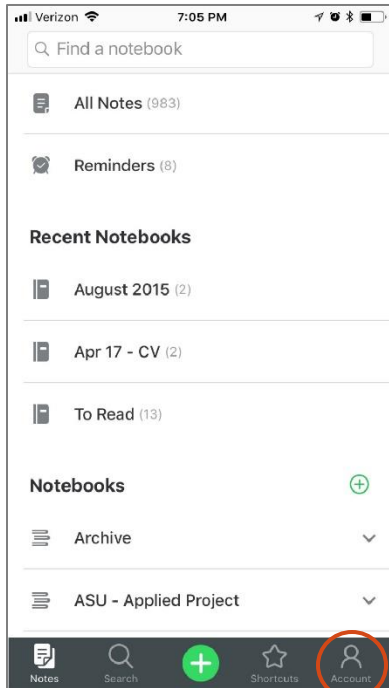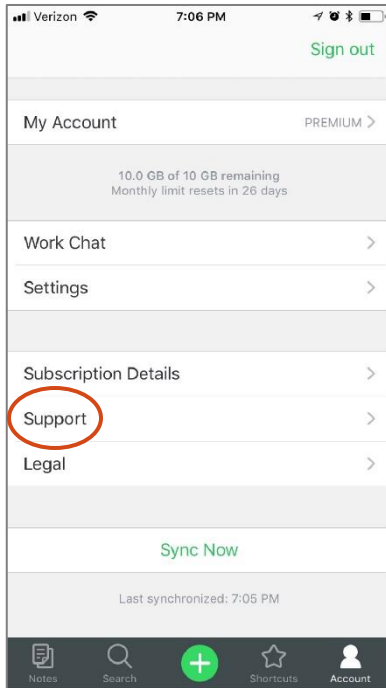
IMAGE 1: HOMEPAGE     IMAGE 2: ACCOUNT SCREEN     IMAGE 3: SUPPORT SCREEN
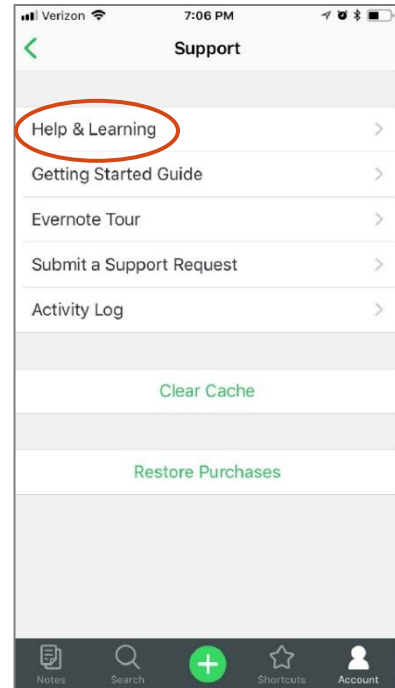
The help tool, a responsive website titled *Help & Learning*, includes four different sections, *Getting Started, Using Evernote, Evernote Business,* and *Account & Service*, which are relevant for four different types of users (free, plus, premium, and business) and five different platforms (Windows app, Mac app, Android app, iOS app, and via the Evernote website) (see Image 4). Independent of the platform used, the content and presentation remain consistent.
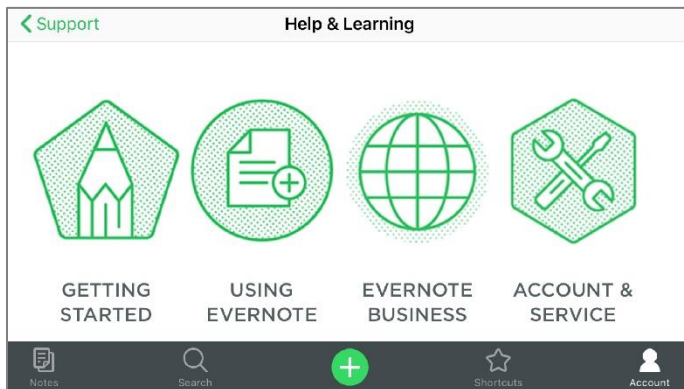


IMAGE 4: *HELP & LEARNING* HOME PAGE

In *Account & Service,* users can make changes to and learn more about their account. *Evernote Business* provides information that is relevant for business account users only. *Getting Started* provides all users on all platforms instructions for starting to use the Evernote app. *Using Evernote* is a container for the remaining content. Only 21 of the 183 articles in *Using Evernote* are included in *Getting Started*. The remaining 162 articles do not relate directly to the categories in *Getting Started*.

8

To evaluate the usability and user experience of the current setup of the Evernote's iOS app, I began by reviewing the existing literature to understand how the relationship between web/desktop and mobile design impact the layout, format, and content help documentation in a mobile application. Next, I analyzed the current usability research publications that I selected based on the inclusion of usability criteria for mobile applications, date written (2011 or later), research method, and mobile device type by performing the following steps: coding each sample for most frequent usability criteria, clarifying and simplifying each entry, reorganizing the content in each code for frequency, and combining each topic in the new organizational structure to create a single set of research-based usability guidelines. I then analyzed the content in *Getting Started* and the *Getting Started Guide* against the research-based usability guidelines from the perspective of a non-business, English-speaking iOS user. The last step involved developing a list of recommendations to make the current help documentation more usable in an iOS mobile setting.

# Review of Literature

## Online Help

Help, support, help center, and frequently asked questions (FAQ) are terms that signal to the user that a help tool is nearby. Online help or help documentation can provide users with a variety of information from a general overview about the product to very detailed how-to instructions or troubleshooting guidance. When the help tool is written effectively, the user is able to answer their question without further assistance. In *Is the Help Helpful? How to Create Online Help That Meets Your Users' Needs*, Weber explains that to create content, it is important to understand the user, the topics they are interested in, and the tasks that they want to perform (2004, p. 47). When developing help documentation, additional decisions need to be made about the types or levels of help—conceptual, procedural, reference, and instructional (Weber, 2004, p. 40).

Decisions about navigation, layout, and format also need to be considered. For example, when considering the format, layout, and navigation, the answer to the question, "what limitations does the application's [website or mobile] user interface place on the types of help access you can make available?" plays a large role in future steps (Weber, 2004, p. 37). The purpose of the product and the initial question about the layout, the format, and the content of the design remain constant, but everything else including the design method is platform-dependent. Accordingly, a

> "platform" is not a precisely defined concept. Rather, it is shorthand used to describe a number of important product features, such as the physical form, display size and resolution, input methods, network connectivity, operating system, and database capabilities. Each of these factors has a significant impact on how the product can be designed, built, and used. (Cooper, Reimann, Cronin, Noessel, Csizmadi, & LeMoine, 2014, p. 206)

Designing an online desktop help system requires a traditional website usability design process to meet the users' needs while working within the limitations of the platform (PC or Mac), internet connectivity, and the abilities of those creating the help documentation. The design of online help for a mobile device requires a different usability design process when

compared to the online desktop help system because of the different platforms. When working with mobile devices, Cooper et al. (2014) suggest that

> an alternative (and, sometimes, more effective) approach is to create a separate mobile version of the site or application. One of the biggest reasons for this is that screen size is only one consideration on the mobile web. It's also critical to think about how your designs accommodate touch interaction and other sensors, as well as how they perform in sunlight and other challenging lighting conditions. (p. 585)

## Usability for Mobile Devices

Just as a new body of knowledge about website usability was developed as the use of websites increased, new usability criteria for mobile versions or apps need to be explored. "Gone are the consistent factors of the desktop experience, the large size of bandwidth, and even the user's focus and attention to the task" (Mendoza, 2014, p. 8). Users are now mobile in many different types of environments with different types of external stimuli while using a device with a smaller screen that does not engage a user as much as a desktop does (Madrigal & McClain, 2010). Today, "users [must] be able to open your app quickly, accomplish what they hope to accomplish, then exit quickly and return their attention to the outside world" (Madrigal & McClain, 2010).

Usability, as it is defined by the International Organisation for Standardisation, is "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" (as cited in "User Experience (UX) Topic Overview/Definition," n.d.). Interpreting that definition and turning it into practice is much more complicated than reading it even though the concept has been around for over 20 years. As designers moved from focusing on the usability of computer software to the usability of websites, they had to adapt and develop new usability guidelines as the end product had changed. The same cycle is repeating as mobile device users seek out applications for their devices that have more features and are highly usable.

While many users expect to access the same information on a mobile device as is on a website or their laptop, the reality of the situation is different. Mobile devices are smaller than laptops with limited screen sizes, display resolution, storage capacity, and processing capabilities. Because of these differences, "the usability of mobile devices and their apps differs from other computer systems" (Nayebi, Desharnais, and Abran, 2012, p. 1). During their study, the authors came to a second conclusion that was almost more impactful. "There is no scientific research addressing the [usability] requirements of new mobile user interfaces" Nayebi, et al., 2012, p. 4). Inostroza, Rusu, Roncagliolo, Jiménez, & Rusu agreed when they determined that historical usability criteria were not a good fit for mobile devices and declared that "there is a need for new usability evaluation methods or at least for the use of traditional evaluations in novel ways" (2012, p. 1).

Access to help tools while using mobile applications is a critical component of a positive user experience. Results from Moumane, Idri, and Abran's study highlighted that a user's experience is dependent on multiple factors including hardware, operating software, and features of mobile applications. Designers and developers need to create "easy and simple interfaces that can be used by any kind of users: novice, experienced and experts. These applications must also be equipped with user guides and online manuals" (Moumane et al., 2016, p. 13). Available help documentation is one of many components that makes a mobile application complete and fully usable.

# Methods

## Process for Developing Research-Based Criteria

### Selecting Publications for Analysis

To develop research-based usability criteria, I began by examining a representative sample of articles researching usability criteria for mobile applications, offline help specifically. Purposive sampling, a non-random sampling procedure (Frey, p. 240), was used to select the 17 samples for content analysis. Each sample was chosen based on how well it fit within the following predetermined criteria. To ensure current and relevant results, only articles written in 2011 or later were accepted. As a group, the sample needed to cover a wide range of mobile devices if general usability guidelines were to be determined. A variety of research methods such as heuristics, ISO standards, expert based-framework, and usability testing were intentionally included in the sample group. The following journal and industry articles were chosen to undergo content analysis:

- "Enhancing Usability Heuristics for Android Applications on Mobile Devices" (2016)
- "Usability Evaluation of Mobile Applications Using ISO 9241 and ISO 25062 Standards" (2016)
- "Reading Content on Mobile Devices" (2016)
- "Mobile Websites: Mobile-Dedicated, Responsive, Adaptive, or Desktop Site?" (2016)
- "An Approach Towards Development of Evaluation" (2015)
- "Basic Patterns for Mobile Navigation: A Primer" (2015)
- "Supporting Mobile Navigation in Spite of a Hamburger Menu" (2015)
- "Mobile User Experience: Limitations and Strengths" (2015)
- "The State of Mobile User Experience" (2015)
- "Multitasking on Mobile Devices" (2015)
- "Heuristic Evaluation on Mobile Interfaces: A New Checklist" (2014)
- "An Expert-based Framework for Evaluating iOS Application Usability" (2013)
- "The State of the Art of Mobile Application Usability Evaluation" (2012)
- "Usability Heuristics for Touchscreen-Based Mobile Devices" (2012)
- "Optimizing a Screen for Mobile Use" (2011)
- "Mobile Content Is Twice as Difficult" (2011)
- "Mobile UX Sharpens Usability Guidelines" (2011)

### Coding Process

Each document in the sample was coded to understand current recommendations for usability guidelines for mobile devices. Based on the highly respected diagram, "The Elements of User Experience," developed by Jesse James Garrett, I chose the following codes for frequency categories: interaction design, information architecture (content structure and organization), navigation design, interface design, information design, and visual design (where is the user's eye drawn to first, contrast and uniformity, consistency, color palettes and typography).

To locate relevant content, I analyzed each document in the sample from the perspective of each code for frequency and created six new documents, one for each code. The third step involved removing duplicate entries in each of the six new documents.

Next, I divided each code for frequency category into multiple subcategories including Errors, Consistency, Navigation, Memory Load, Layout, Presentation, and Goals. Each

subcategory was then edited for readability and relevancy. I then combined the subcategories from all six codes for frequency, removed duplicate entries, and developed the final organizational structure for the research-based usability criteria.

**Research-Based Usability Categories**

- Content
    - Data Entry
    - Help Documentation
- Reduce Memory Load
- Layout/Visual Appearance
    - Layout
        - Lists
        - Input Fields
    - Visual Appearance
        - Colors
        - Typeface
    - Multimedia/Graphics/Logos
        - Images/Logos
        - Animation
        - Videos
        - Icons
        - Buttons/Touchable Objects
- System/App feedback
- UI Navigation & Navigation Elements
    - Types of Navigation
    - Links
    - Menus
        - Choices
        - Titles
        - Structure
    - Search Function
    - Scrolling
- The User

## Help Documentation Analysis Process

### Overview

To begin the analysis process, I reviewed the 30 pages in *Getting Started* and the *Getting Started Guide*, "Welcome to Evernote for iPhone, iPad, and iPod Touch." To ensure that none of the pages were overlooked, I created a map of the navigational structure of *Getting Started* (see Image 5). The different shapes indicate different levels in the structure, and the colors indicate the same page in multiple locations
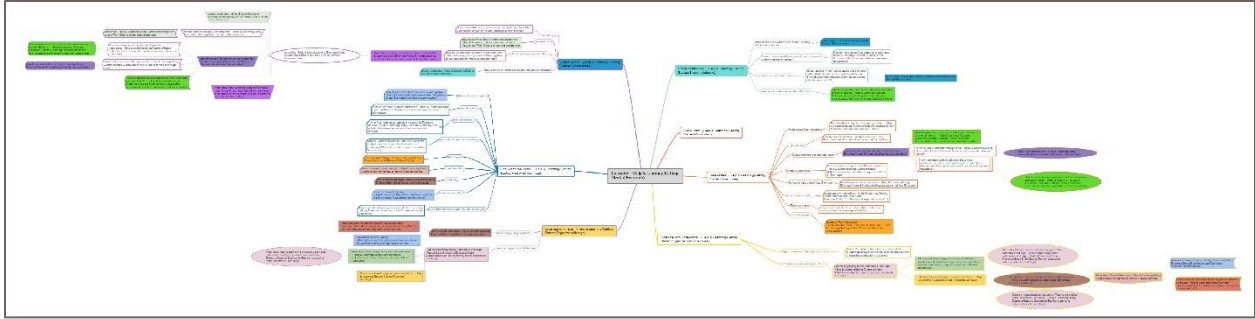
IMAGE 5: *GETTING STARTED* MAP

Each page title, including duplicate pages, was then given a number that represented its place in the overall structure (see Appendix A) and was placed in its own column in a spreadsheet. After the usability criteria were determined, I split them into two sets. The first set included 313 criteria that was relevant for each page in *Getting Started* and the *Getting Started Guide*. The second set included 60 criteria that was applicable to *Getting Started* and the *Getting Started Guide* as a single unit. I then placed the first set in the rows accompanying the numbers representing the page titles. The second set was placed in a separate spreadsheet. Before scoring could begin, I made the assumption, based upon Evernote's description of the product and potential users, that the user knows how to use an iPhone.

### Scoring Procedure

The scoring process involved qualitatively analyzing each page against the previously determined usability criteria (see Appendix B for raw data). To score each page, I developed a rating system that would rate each criterion on how well the design agreed with that criterion. A 4 meant that the design completely (100%) agreed the criterion. A 3 indicated a partial agreement (50% to 99%), while a 2 represented a partial disagreement (1% to 49%). A 1 was given if the design was in complete disagreement with the criteria (0%). If a specific criterion was not applicable for a page, a 0 was recorded. To differentiate between a score of 2 or a score of 3, the specific page either had more components in disagreement with the criterion or more components in agreements with the criterion.

While performing the scoring, I determined that multiple pages that are included in the navigational structure were not relevant as they focused solely on a non-iOS platform or the business user. Those pages were not scored during this analysis.

# Results and Analysis

## List of Identified Research-Based Usability Criteria for Help Documentation

The coding process resulted in a list of 373 usability criteria. Since the purpose of help documentation is usually limited to providing instruction and guidance, only 292 of the 373 criteria are applicable to help documentation when compared to an entire mobile application. Of the 292 usability criteria, 57 criteria are relevant to the help documentation as a single unit. The remaining 81 usability criteria would be more appropriate for the mobile app itself. The following is the final list of research-based usability criteria that was used to analyze *Getting Started* and the *Getting Started Guide.*

| Category | Criteria |
|---|---|
| Content | |
| | the screen begins with a title or a header that describes the screen's contents |
| | secondary information is placed on subsidiary pages |
| | a list of concrete steps to accomplish each task is provided |
| | language is clear, effective, and appropriate (avoid complicated content) |
| | information is conveyed in a condensed, headline-type style |
| | short labels or well-understood symbols are used for controls |
| | language and words, phrases, and concepts familiar to the user are used (based on the selected user group); system-oriented concepts, technicalities, and jargon are avoided |
| | dialogs are designed to yield closure |
| | not saying how information will be used and asking for the same info twice is avoided |
| | only information essential to decision making is displayed on the screen |
| | prompts are brief, unambiguous, and in the active voice when expressing the affirmative |
| | short, easy passages are used |
| | when prompts imply a necessary action, the words in the message are consistent with the action |
| | content-carrying keywords appear at the beginning of the headlines |
| | dates are described accurately; informal terms (ex. yesterday, tomorrow) are avoided |
| | captions are used to help convey the meanings of images |
| | for first time users, clear and simple instructions that focus on a few features are provided |
| | useful content is presented immediately |
| | clear summaries that give users an overview are used |
| | information is not repeated multiple times |
| | the most important content for each context or screen is used |
| | mobile content is not arbitrarily limited |
| | high informative content is placed in high hierarchy areas |
| | subheads, bulleted lists, and highlighted keywords are used effectively |
| | spelling or grammatical mistakes are avoided |
| | abbreviations and acronyms are avoided unless they are straightforward and easily understood |
| | additional explanatory information is provided when an item is ambiguous |
| | useful content is presented immediately |
| Data Entry | |
| | appropriately sized labels (of data entry fields) are used |
| Reduce Memory Load | |
| | objects, actions, and options are visible |
| | recognition rather than recall is used |
| | tasks that require extensive memory load are avoided |
| | all data a user needs at each step in a transaction sequence is displayed |
| | the number of items and terms for each item in a navigation menu is controlled |
| Layout/Visual Appearance | |
| | information is displayed in a logical and natural order |
| | the design is tailored to appeal to the targeted user groups and to avoid unnecessary complexity |
| | the graphic user interface and physical user interface have been carefully designed |
| | the design focuses on one feature at a time |
| | page length is controlled |
| | the sequence of information on a screen is placed in a logical and usable manner |
| | features have been prioritized, and feature placement has been carefully chosen |
| | the page design is light, yet contain as much information as possible |
| Layout | |
| | objects that look similar to one another are actually similar and can be perceived as part of a group or pattern |
| | the eye is compelled to move from one object another (continuity) |
| | elements placed close together belong to a group (proximity) |
| | the value of each view or piece of content is high enough to make it necessary to be included |

IMAGE 6: USABILITY CRITERIA FOR HELP DOCUMENTATION (PART 1 OF 8)

14

| | |
|---|---|
| | content is prioritized over chrome |
| | the article title is anchored to the top of the screen when content is long and needs scrolling |
| | unrelated content is (e.g., ads) avoided |
| | focus is maintained on the primary content in all orientations |
| | the correct amount of padding or margins is used between elements |
| | invisible target space is included around the visible target |
| | "white" areas between information objects or text areas have been added |
| | field labels are close to fields, but separated by at least one space |
| | field labels appear to the left of single fields and above list fields |
| | the layout avoids visual noise |
| | information is placed efficiently on the screen |
| | the most frequently used parts of the app are listed from top-left to bottom-right, in order of importance |
| | the data display starts in the upper-left corner of the screen |
| | figures (forms, silhouettes, and shapes) are differentiated from background (the surrounding area) |
| | elements are placed in a recognizable position. |
| | controls that are related to a task are grouped together and reflect the sequence of the actions in the task |
| | the search box is located on the homepage |
| | space has not been removed from the content that users care about. |
| **Lists** | |
| | if the items are text-only, and if they are sorted in an order that matches the needs of the task, all items on a list are on the same page |
| **Input Fields** | |
| | the number of submissions (and clicks) that the user needs to use to input information has been minimized |
| | it is easy for users to make a choice |
| | a consistent design is used for input elements (e.g., textbox, dropdown) |
| | the system completes unambiguous partial input |
| | the user can recognize how to interact with the element |
| | the input data is tolerant of typos and offers corrections |
| | data inputs are case-blind whenever possible |
| | data input types are appropriate for information types (e.g., use number input type for numeric information) |
| | required data entry fields are clearly marked |
| | optional data entry fields are clearly marked |
| **Visual Appearance** | |
| | the design is divided into thirds, both vertically and horizontally, and a grid of intersecting lines is built. Elements are placed along the lines and at the intersections. (rule of thirds) |
| | the number and prominence of controls are minimized in order to decrease their weight in the UI |
| | the controls are visually subtle (they integrate with app's graphical style, and can be discovered and understood without being conspicuous.) |
| | size, boldface, underlining, color, shading, or typography are used to show relative quantity or importance of different screen items |
| | a graphic's size is optimized for performance and resolution in order to positively impact response time |
| | there are visual differences between interaction objects (buttons) and information objects (labels, images) |
| | on-line instructions are visually distinct |
| | a physical, realistic dimension is added to the app when appropriate |
| | the high opportunity cost of each element is valid |
| | there is a high content-to-chrome ratio (ex. content and feature prioritization are key) |
| | attention-getting techniques are used with care |
| | views contain information that is relevant or needed |
| | a link to a higher resolution image is offered when the it requires closer inspection |

IMAGE 7: USABILITY CRITERIA FOR HELP DOCUMENTATION (PART 2 OF 8)

| | |
|---|---|
| **Colors** | |
| | three to four primary colors are used. (maximum) |
| | additional colors are used only occasionally |
| | color is used in conjunction with another redundant cue |
| | color coding is used for clarity where appropriate |
| | color and brightness contrast are used between image and background colors |
| | light, bright, and saturated colors are used to emphasize data, and darker, duller, and desaturated colors are used to de-emphasize data |
| | brand colors are used in a subtle and understated way |
| **Typeface** | |
| | the number of different typefaces used is limited |
| | typefaces are used cautiously when emphasizing content |
| | typefaces that are suitable for reading are used |
| | homoglyphs (e.g., 1, I, and L; Zero and O) and heavy use of all uppercase letters are avoided |
| **Multimedia/Graphics/Logos** | |
| | relevant metaphors (icons that match actions) are used as visual cues and when needed to help the user understand and learn the task |
| | When appropriate, scenes are enhanced, or objects are enlarged to communicate with users and to express the essence of the app |
| | beautiful, high-resolution artwork and icons have been created from the start; rather than scaling up the quality later |
| | chosen graphic sizes maintain user effectiveness and efficiency |
| | design elements that looks like they can interact (e.g., GUI control) when they cannot interact or provide feedback are avoided |
| | responsiveness, simplicity, size, and format of text have been considered in the design of icons and buttons |
| | images and multimedia add value |
| **Images/Logos** | |
| | images/icons are used as visual cues to provide information (e.g., volume scale – uses speakers without waves refer to low sound or mute) |
| | information elements (e.g., images, labels) stand out from the background |
| | images are understandable and well sized using the appropriate resolution |
| | an entire image is viewable without scrolling |
| | the figures and the background are balanced; it makes the perceived image clearer |
| | photos are used instead of words, where appropriate |
| | photos are used instead of icons, as appropriate |
| | the logo is meaningful, identifiable, and sufficiently visible |
| **Animation** | |
| | cyclically moving animations, flash content, Java Script, and animated carousels are avoided |
| | unnecessary moving animations of information (e.g., zoom in, zoom out) is avoided |
| **Videos** | |
| | a textual description of what the video is about, and the video length is included |
| | clicking on the thumbnail and clicking on the video title both play the video |
| **Icons** | |
| | icons are concrete, familiar, recognizable, and visually and conceptually distinct |
| | no more than twelve to twenty icon types are used |
| | excessive detail in an icon design is avoided |
| | each individual icon is a harmonious member of a family of icons |
| | each icon stands out from its background |
| **Buttons/Touchable Objects** | |
| | assumption - links are considered tappable areas too |
| | tappable elements have a target area of about 44 x 44 points, 1 x 1 cm, or 48 x 48 pixels |
| | tappable and untappable areas of the app are clearly recognizable |
| | a back button is offered to go to a previous view without data loss |
| | operating system's buttons (e.g., back button, home button) are mostly (or always) visible, except for multimedia content |

IMAGE 8: USABILITY CRITERIA FOR HELP DOCUMENTATION (PART 3 OF 8)

| | |
|---|---|
| | touch targets for each headline are fairly large |
| | buttons or similar user interface elements are used for main functionalities |
| **System/App feedback** | |
| | operating system's status bars are mostly (or always) visible, except for multimedia content |
| | if expandable menus are used, menu labels clearly indicate that they expand to a set of options |
| | the current status of an icon is clearly indicated |
| | there is visual feedback when items and options are selected or moved |
| | links are recognizable and characterized according to their state (visited, active) |
| | a predictable response for clicking links is used |
| | feedback to indicate that the next group of actions can be started after the user completes an action (or group of actions) is provided |
| | the user can predict the behavior of the system in response to his actions |
| | the app makes it clear which dialog the user is in, where he is in the app, and which actions he can take and how to perform them |
| | there is a visual cue when the user scrolls to the boundary of an element (e.g., listview) |
| | there is visual feedback in menus or dialog boxes to indicate which choices are selectable |
| | response times are appropriate for users' cognitive processing |
| | response times are appropriate for the task |
| | the app informs the user about all processes and state changes through the use of feedback |
| | sound (e.g.: ringtone, message tone, email tone, low battery tone, and camera shutter sound - sounds should be distinctive (by default) and customizable) , light (e.g.: notification light, under button light, camera flash), graphic information (e.g.: static icon, animated icon, text notification, pop-up alert message, popup error message), or vibration are used as feedback methods |
| **UI Navigation & Navigation Elements** | |
| | the system enables users to interact with elements by swiping, gesturing, or pinching instead of only touching the elements |
| | dumping users into the app is avoided |
| | the number of controls from which the user must choose are minimized |
| | standard controls and gestures are used appropriately and consistently |
| | unnecessary pages, links, buttons, or selections have been removed to make the navigation design more effective |
| | Pareto guideline: a high percentage of users will perform a low percentage of actions; greater emphasis has been put on the most important tasks and actions |
| | buttons and tappable areas are the right size and shape and are located along the top left to bottom right path |
| | users can leave an unwanted state via clearly marked cancel/exit points |
| | if it looks the same, it acts the same |
| | UI elements are used consistently |
| | usage recommendations for standard UI elements are used |
| | standard buttons and icons are never given another meaning |
| | the user knows where he is in the app, how he got there, and where he can go |
| | navigation is discoverable, accessible, consistent, and uses little screen space |
| | horizontal and vertical navigation is consistent across orientations |
| | the most frequently used (usually higher level) information is placed near the top, and in the following order: from general to specific, and from high level to low level |
| | users are given a logical and predictable path to follow |
| | only one path to each location is provided; exception: if a screen needs to be accessible in different circumstances, provide a modal view |
| | breadcrumbs are used (on sites with a deep navigation structure but avoided on sites with shallow navigation structures) |
| | key user tasks are easy to accomplish in the absence of navigation or with hidden navigation |
| | user characteristics are considered when determining which navigation tool would work best |
| | the interaction design matches the real world |
| | design for interruptions; save state for users and allow users to save state |
| | prioritize the essential and simplify tasks and interactions |
| | strong support is provided for comparing items and for switching between recently viewed items |
| | screens move forward and backward step by step sequentially |

IMAGE 9: USABILITY CRITERIA FOR HELP DOCUMENTATION (PART 4 OF 8)

| | |
|---|---|
| | users can easily reverse their actions or cancel an action without the loss of data |
| | task flow starts with actions that are essential to the main task; users can start the task as soon as possible |
| | the user can initiate and control the pace and sequencing of the interaction |
| | the user is not forced to pass through an extended dialogue |
| | the user can change the level of detail available |
| | default information makes sense to the user |
| | basic configuration options are provided; expert users are given access to advanced configuration options |
| | provide shortcuts to the most frequent tasks and allow their customization and/or definition |
| | instructions that are necessary for the user to get started are present |
| | navigation needs are considered in the context of the overall chrome on a page |
| | users are provided with quick access to the navigation and an at-a-glance overview of what the site has to offer |
| | visible and related categories are used to maintain a strong information scent |
| | visible and/or intuitive navigation are used to encourage user interaction |
| | navigation points between starting locations and tasks are clear |
| | actions associated with the standard gestures that users know have not been changed |
| | the type of navigation chosen supports user task completion |
| | nowhere links and orphan pages are avoided |
| | an expand-collapse element for sub-content is provided |
| | navigation uses additional features to complement the search function |
| | navigation and search are accessible and discoverable, but don't forget to prioritize content over chrome |
| | mini-Ias (mini table of contents at the beginning of the page that tell users what the page is about and implement direct access to the various sections), accordions, sticky navigation, and back-to-top buttons are used |
| | when several items are listed in columns, one on top of another, users can hit anywhere in the row to select the target corresponding to that row |
| **Types of Navigation** | |
| | for sites that are primarily task oriented, extra space should be devoted to other utility-navigation options or search |
| | when using long mobile pages, accordions, sticky navigation, and back-to-top buttons are used |
| | content or stories from different content areas of the site are displayed to provide quick access to different sections of the site without accessing navigation |
| **Links** | |
| | links with a strong information scent are used |
| | links to related content to help the user navigate quickly between similar topics are used |
| | links that appear within text are used to move users to supporting or related information |
| | use lists of related links within or adjacent to content to aid navigation |
| | a link to the full website is included on the mobile page |
| | recognizable and tappable navigation links are provided |
| **Menus** | |
| | the most frequently used menus are placed in the most accessible positions |
| | responsiveness, simplicity, size, and format of text have been considered when designing the menu |
| | a mechanism that allows users to go back to a previous menu is provided in menus with multiple levels |
| **Choices** | |
| | menu choices are logical, distinctive, mutually exclusive, and complete |
| | menu choices are ordered in the most logical way given the user, item names, and task variables |
| | menu choices fit logically into categories that have readily understood meanings |
| | menu choice lists are presented vertically |
| | the first word of each menu choice is the most important |
| | menu choice names are consistent within each menu in grammatical style and terminology |
| | the structure of menu choice names matches their corresponding menu titles |

IMAGE 10: USABILITY CRITERIA FOR HELP DOCUMENTATION (PART 5 OF 8)

| | |
|---|---|
| | if menu choices or menu items are ambiguous, the system provides additional explanatory information when a choice or item is selected |
| | if users can go back to a previous menu, users can change their earlier menu choice |
| **Titles** | |
| | menu titles are either centered or left-justified |
| | menu titles are parallel, brief, yet long enough to communicate |
| **Structure** | |
| | the menu structure matches the task structure |
| | each lower-level menu choice is associated with only one higher level menu |
| **Search Function** | |
| | the search box is accessible, recognizable, and the largest possible size that will fit on the screen |
| | the search function is quick, efficient, and the primary function |
| | local data is live-filtered (narrow results as the user continues to type.) |
| | the search bar is displayed above a list, or the index for a list |
| | information is conveyed in a condensed, headline-type style |
| | search strings are preserved between searches |
| | auto-completion and suggestions are offered to users |
| | if the system collected user input information, the user can clear the information that has been input (search history) |
| | search results are shown in a comprehensive manner |
| | the search function is featured as a distinct mode if it is a primary function in the app |
| **Scrolling** | |
| | the system provides tools for filtering items or scrolling faster |
| | if the list is too long, layouts that require scrolling are avoided |
| **The User** | |
| | users can apply knowledge gained in one part of the app to the system as a whole |
| | the page presents information only when it is needed |
| | the page provides support to the user |
| | the page takes into account the user's experience level (expert or novice) with a particular type of device and a specific mobile application, and how it will impact the level of ease in using or understanding the information |
| **Help Documentation as a Single Unit** | |
| | labels and titles are consistent throughout the app, and accurately define the tasks to be performed in the app |
| | non-standard GUI controls, inconsistencies, irrelevant information, unnecessary complexity, system-centric features, no feedback, bad error messages, asking for the same information twice, no default values, dumping users into the app, and not saying how information will be used are avoided |
| | the look & feel corresponds with the goals, characteristics, content, and services |
| | the design of *Help & Learning/Getting Started* is visually appealing and well-integrated into the functionality of the app, providing similarity, continuity, completion, proximity, and figure/ background differentiation. |
| | the design of the *Getting Started Guide* is visually appealing and well-integrated into the functionality of the app, providing similarity, continuity, completion, proximity, and figure/ background differentiation |
| | the overall design is self-sufficient |
| | the design of *Help & Learning/Getting Started* balances fluid and efficient interactions and a smaller footprint with low memorability and discoverability |
| | the design of the *Getting Started Guide* balances fluid and efficient interactions and a smaller footprint with low memorability and discoverability |
| | the design of *Help & Learning/Getting Started* supports learning and provides the required assistance to the user |
| | the design of the *Getting Started Guide* supports learning and provides the required assistance to the user |
| | the UI communicates value clearly |
| | the gist is presented before the minutiae |
| | the user input requested is balanced with what the app offers the user in return, providing as much information or functionality as possible for each piece of information entered by the user |

IMAGE 11: USABILITY CRITERIA FOR HELP DOCUMENTATION (PART 6 OF 8)

| | |
|---|---|
| | mobile app [help documentation] has only those features that make sense for the mobile use case |
| | the UI conforms to user expectations and offers multiple levels of detail when the system supports both novice and expert users |
| | the app [help documentation] starts instantly |
| | when an app restarts, its state is restored |
| | the UI is error-tolerant, with error management strategies in place to deal with errors without the need for action by the user |
| | the meaning of words, situations, or actions in an app are clear |
| | the app's help documentation purpose and usage area [page] can be readily understood from the start |
| | consistency enables the user to be able to do things in a familiar, standard, and consistent way |
| | the UI meets the predictable contextual needs of the user and respects commonly accepted conventions |
| | the help system's visual design and interface (navigation, presentation, and conversation) is consistent with the navigation, presentation, and conversation interfaces of the application it supports |
| | the design scheme and styles of the various parts of the app are consistent: Typography, input elements (e.g., textbox, dropdown), physical size (e.g., font size, element size), screen density, elements used across multiple screens (e.g., title on multipage data entry screens, page location of online instructions, and label location for input fields), icon design scheme, and stylistic treatment |
| | the number of steps and page loads are minimized |
| | two-level navigation is used |
| | shortcuts have been included to speed up the interaction between the user and help documentation (the app), and to increase user control over help documentation (the app) |
| | the homepage should reflect the key content and functionality of the site and provide links directly to the primary tasks (content sections) |
| | established standards have been applied consistently on all menu screens |
| | the menu is placed in the same place across the app |
| | menu choice names are consistent across the system, in grammatical style and terminology |
| | menus are broad (many items on a menu) rather than deep (many menu levels) |
| | users can individualize the UI to modify interactions with the app [help documentation] and have information presented in a way that suits the users' capabilities and needs |
| | the app supports the user's belief that they have control over the outcome |
| | the app [help documentation] considers human limitations, both cognitive and sensory |
| | the structure of a data entry value is consistent from screen to screen |
| | balance depth and width if the site uses hierarchical structure |
| | potential characteristics include following guidelines for mobile usability: fewer features, bigger touch targets, full headlines (stronger information scent), enhanced scannability, more content above the fold, limit redundancies, increase spacing between clickable points, and label the drop-down menu |
| | structure and navigation are used to create a tight information space |
| | the app (help documentaion) puts greater emphasis on tasks and actions that most user will perform |
| | the app/help documentation design overcomes environmental conditions that fragment user attention and focus |
| | mobile limitations (small screen, display resolution, processing, and memory capabilities) have been overcome |
| | accessibility challenges (ex. color blindness) that could limit overall usability and access have been addressed |
| | design choices do not repeat information multiple times (redundancy) |
| | the impact of culture on all aspects of the visual design: layout, colors, images, shapes, icons, etc. has been considered |
| | consistent definitions, situations, and actions have been used |
| | the single-window constraint and collecting, comparing, and choosing between multiple items (on multiple pages) has been addressed |
| | complex spreadsheets, comparison tables, and visualizations are used sparingly |
| | the overall design takes into account the need to continuously divide one's attention between the content being typed and the keypad area |
| | all aspects related to the interaction between the user, system and environment occur concurrently |

IMAGE 12: USABILITY CRITERIA FOR HELP DOCUMENTATION (PART 7 OF 8)

| | the device obtains information from itself, so users do not need to provide information that that the app can easily access |
|---|---|
| | the app does not quit programmatically |
| | the number of choices available to the user has been minimized (Hick-Hyman's law - the time it takes to make a selection increases with every additional choice available) |
| | content is prioritized, and navigation is accessible and discoverable |
| | a 2-level navigation is used |
| | the design is flexible enough to adapt to the needs and behavior of the user |
| | the experience is tailored to mobile |

IMAGE 13: USABILITY CRITERIA FOR HELP DOCUMENTATION (PART 8 OF 8)

## Analysis of Evernote's Help Documentation Based on Usability Criteria

### Overview

While scoring each page, I also determined its place in the navigation design of *Using Evernote*. For example, page 1.2.1 "How to Delete Notes and Manage Trash" in *Getting Started* is also page 2.1.2 in *Using Evernote*, and page 1.5.2 "How to Save Note Location Information" in *Getting Started* is also page 2.1.39 in *Using Evernote* (See Appendix A). In the existing navigation scheme, the navigational structure of *Using Evernote* creates unnecessary confusion when the user moves around *Getting Started*.

Unbeknownst to the user, certain pages and links found in *Getting Started* drop the user at unknown locations in *Using Evernote*. For example, from the page, "Organize with Tags," which is located in *Getting Started* (see Image 14), the user can follow a link to learn more about accessing tags using shortcuts. The user then lands on the page "Tips for organizing, notes, notebooks, and tags" (see Image 15), which is located in the Notes & Notebooks section. If the user uses the breadcrumb, they are taken to a page located in *Using Evernote* (see Image 16). Without understanding how they found their way to *Using Evernote*, the user is likely to struggle when trying to retrace their steps back to "Organize with Tags."
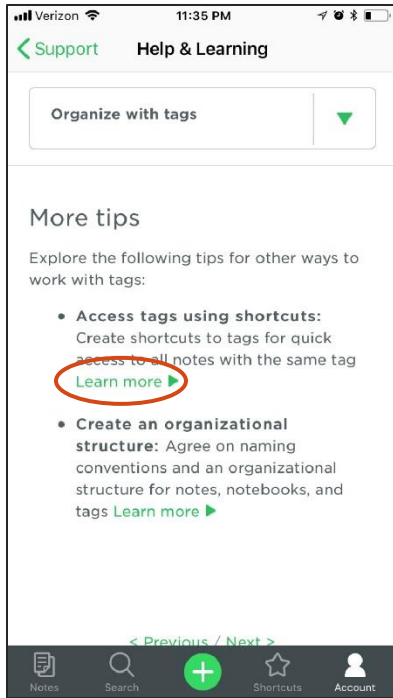
IMAGE 14: "ORGANIZE WITH TAGS" IN *HELP & LEARNING*
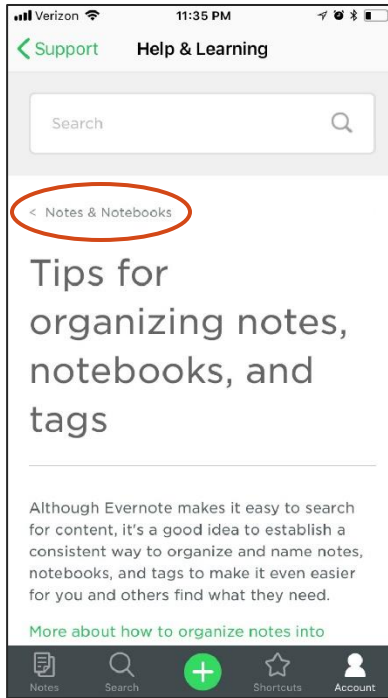
IMAGE 15: LINK FROM "ORGANIZE WITH TAGS"
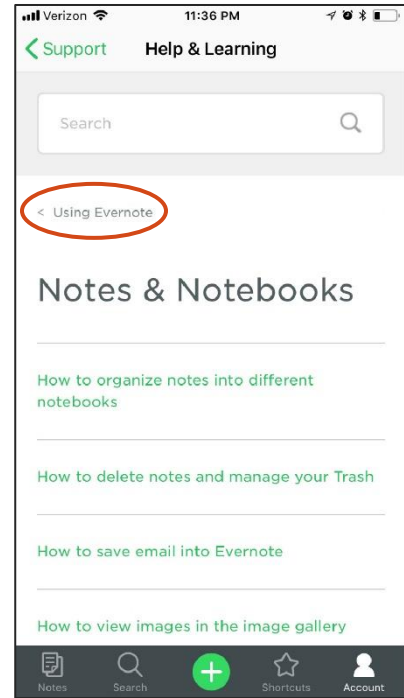
IMAGE 16: *"NOTES AND NOTEBOOKS" IN USING EVERNOTE*

After scoring about half of *Getting Started's* pages, it became clear that the issues surrounding the navigational structure were more extensive than originally anticipated. Rather than using a navigation menu, the pages in *Using Evernote* are centered around a navigation hub (see Image 17).
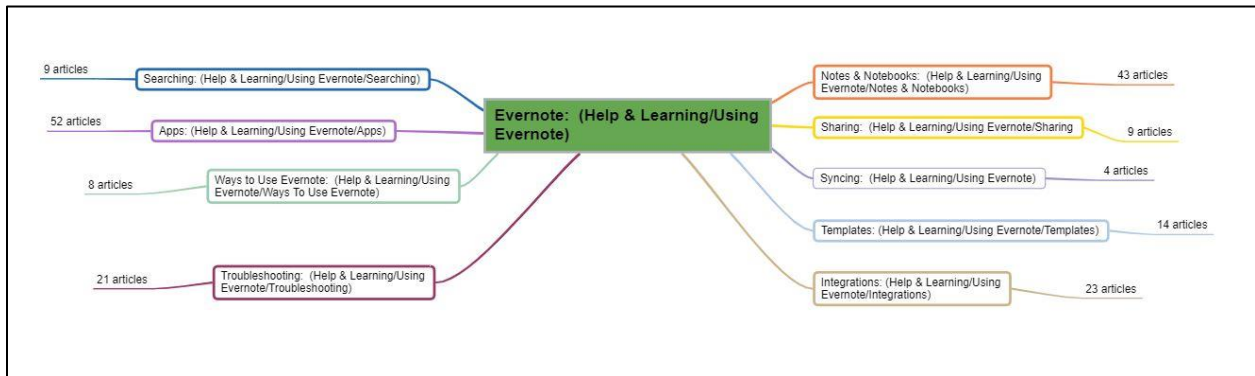


IMAGE 17: *USING EVERNOTE* NAVIGATION DESIGN

To locate additional information about a topic in *Using Evernote*, the user must go back to the *Using Evernote* homepage and repeat the process from there. Or, if the user needs to return to *Getting Started,* they must figure out on their own that they need to return to the *Support* homepage and begin the process again. While this knowledge did not come directly from analyzing the pages using the research-based usability criteria, it is a major issue that needs to be addressed to improve overall usability. To correct the problem, additional research regarding the information architecture, information design, and the navigation design needs to be conducted. As a result, this report focuses only on the pages in *Using Evernote* that are relevant to *Getting Started* and the *Getting Started Guide*.

22

Once all the pages were scored, each page's scores were totaled. The total for each page was compared to the maximum potential points for that page (see Appendix C). By comparing each total score against the maximum potential points for each page, I was able to calculate the ratio for each page (see Table 2). The ratio for each page was compared against the ratio of the other pages. Determining each page's ratio allowed me to compare the effectiveness of one page against another and look more deeply into why a specific page had a lower ratio.

## Evaluation of Pages

The following table contains the ratio for each page.

| Page | Ratio |
| --- | --- |
| A: Help & Learning home page | 0.835 |
| 1.0: Getting Started - (Choose product) | 0.842 |
| 1.0.1: Evernote (page title with links) | 0.807 |
| 1.1.0: Quick start | 0.871 |
| 1.2.0: Take notes | 0.892 |
| 1.2.1: How to delete notes and manage Trash | 0.829 |
| 1.2.2: How to make a checklist | 0.826 |
| 1.2.3: How to use reminders | 0.828 |
| 1.2.3.2: How to add a reminder through email | 0.829 |
| 1.2.3.2.1: How to use reminders | 0.828 |
| 1.2.3.3: How reminders work in joined and business notebooks | 0.793 |
| 1.2.4: How to annotate images and PDFs in Evernote | 0.821 |
| 1.2.5: How to save email into Evernote | 0.818 |
| 1.3.0: Organize with notebooks | 0.846 |
| 1.3.1: How to organize notebooks into stacks | 0.814 |
| 1.3.2: Tips for organizing notes, notebooks, and tags | 0.829 |
| 1.3.2.1: How to organize notes into different notebooks | 0.827 |
| 1.3.2.1.1: Tips for organizing notes, notebooks, and tags | 0.829 |
| 1.3.2.2: Organize with tags | 0.875 |
| 1.3.2.2.1: How to create shortcuts | 0.83 |
| 1.3.2.2.1.1: How to create a saved search | 0.807 |
| 1.3.2.2.1.1.1: How to use Evernote's advanced search syntax | 0.828 |
| 1.3.2.2.1.1.2: What's the difference between a tag and a saved search? | 0.807 |
| 1.3.2.2.2: Tips for organizing notes, notebooks, and tags | 0.829 |
| 1.4.0: Organize with tags | 0.875 |
| 1.4.1: How to create shortcuts | 0.83 |
| 1.4.1.1: What's the difference between a tag and a saved search? | 0.807 |
| 1.4.1.2: How to use Evernote's advanced search syntax | 0.828 |
| 1.4.2: Tips for organizing notes, notebooks, and tags | 0.829 |
| 1.4.2.1: How to organize notes into different notebooks | 0.827 |
| 1.4.2.1.1: Tips for organizing notes, notebooks, and tags | 0.829 |
| 1.4.2.2: Organize with tags | 0.875 |
| 1.5.0: Find what you need | 0.84 |
| 1.5.1: How to use Evernote's advanced search syntax | 0.828 |
| 1.5.2: How to save note location information | 0.757 |
| 1.5.6: How to create a saved search | 0.807 |
| 1.5.7: How to create shortcuts | 0.83 |
| 1.5.8: How to use Evernote's advanced search syntax | 0.829 |
| 1.6.0: share notes | 0.846 |
| 1.6.1: How to use iMessage to share notes | 0.801 |
| 1.6.3.1.1: How to use note links to connect between notes | 0.816 |
| 1.6.3.1.1.2: How to share notes via email | 0.843 |
| 1.6.3.1.1.3: How to use reminders | 0.83 |
| 1.6.3.1.1.3.1: How reminders work in joined and business notebooks | 0.793 |
| 1.6.3.1.1.3.2: How to add a reminder through email | 0.829 |
| 1.6.3.1.1.3.2.1: How to use reminders | 0.83 |
| 1.6.4: share notebooks | 0.844 |
| 1.7.0: share notebooks | 0.844 |
| 1.7.1: share notes | 0.846 |
| 1.7.3: What happens when multiple users edit the same note? | 0.819 |
| 1.7.3.1: share notes | 0.846 |
| B: Welcome to Evernote for iPhone, iPad, and iPod Touch | 0.817 |
| Help Documentation as a Single Unit | 0.754 |

TABLE 2: RATIO FOR EACH PAGE

To better understand how the pages related to each other, I calculated the average ratio for all pages (0.830) and plotted the average ratios, the ratios for each individual page, and the ratio for the criteria relevant to the help documentation as a single unit on the chart (see Figure 1). This visual representation of the ratios in comparison to the average led me to two conclusions. First, the majority of the individual page ratios fell within 0.05 points of each other and, therefore, those pages offer the user a similar experience in terms of how usable each page is. Second, there are outliers which have lower and higher usability ratios than the majority of pages; this result helped me identify the pages that needed most improvement.
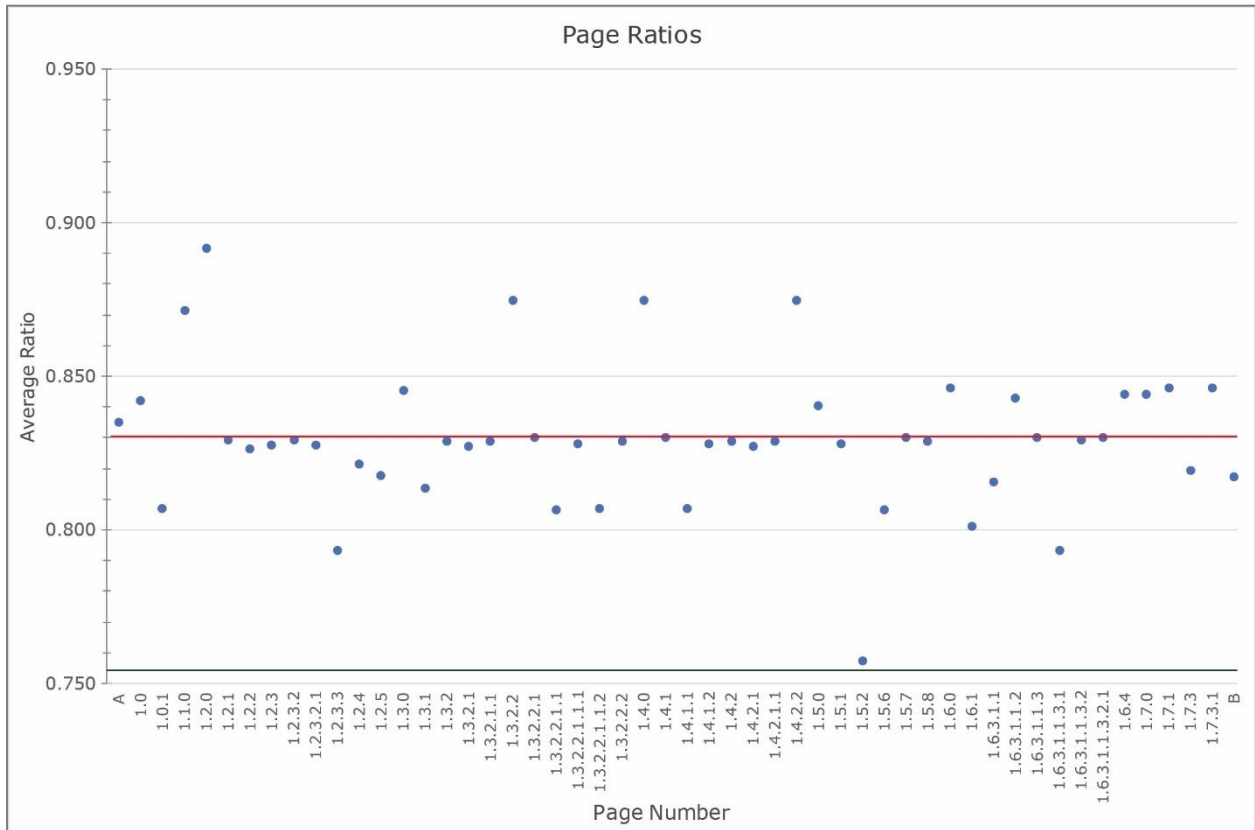


FIGURE 1: CHART OF PAGE RATIOS; AVERAGE RATIO: 0.830; HELP DOCUMENTATION AS A SINGLE UNIT AVERAGE RATIO: 0.754

Six pages were located outside of 0.80 to 0.850 range. They are

- 1.2.0: Take Notes at 0.892;
- 1.4.0/1.3.2.2/1.4.2.2: Organize with Tags at 0.875;
- 1.1.0: Quick Start at 0.871;
- 1.6.1: How to Use iMessage to Share Notes at 0.801
- 1.2.3.3/1.6.3.1.1.3.1: How Reminders Work in Joined and Business Notebooks at 0.793; and
- 1.5.2: How to Save Note Location Information at 0.757.

Pages 1.2.0, 1.4.0/1.3.2.2/1.4.2.2, and 1.1.0 had the highest ratios and are considered the most usable while pages 1.6.1, 1.2.3.3/1.6.3.1.1.3.1, and 1.5.2 are considered the least usable. After I compared the usability criteria scores for the top three pages against the

bottom three pages, I was able to determine which usability criteria should be considered for potential design changes. The following list of usability criteria takes into account that not every criterion is relevant for each page.

- ***Content***
    - o a list of concrete steps to accomplish each task is provided
    - o information is conveyed in a condensed, headline-type style
    - o useful content is presented immediately
    - o secondary information is placed on subsidiary pages
    - o the most important content for each context or screen is used
    - o additional explanatory information is provided when an item is ambiguous
    - o For first time users, clear and simple instructions that focus on a few features are provided
- ***Reduce Memory Load***
    - o all data a user needs at each step in a transaction sequence is displayed
- ***Layout/Visual Appearance-Layout***
    - o the article title is anchored to the top of the screen when content is long and needs scrolling.
- ***Layout/Visual Appearance-Visual Appearance***
    - o a graphic's size is optimized for performance and resolution in order to positively impact response time
    - o a physical, realistic dimension is added to the app when appropriate
- ***Multimedia/Graphics/Logos-General***
    - o responsiveness, simplicity, size, and format of text have been considered in the design of icons and buttons
- ***Multimedia/Graphics/Logos-Buttons***
    - o a back button is offered to go to a previous view without data loss
- ***System/App Feedback***
    - o The app makes it clear which dialog the user is in, where he is in the app, and which actions he can take and how to perform them.
    - o feedback to indicate that the next group of actions can be started after the user completes an action (or group of actions) is provided
- ***UI Navigation & Navigation Elements-General***
    - o users are given a Logical and predictable Path to Follow
    - o only one path to each location is provided; exception: if a screen needs to be accessible in different circumstances, provide a modal view
    - o screens move forward and backward step by step sequentially
    - o Users can easily reverse their actions or cancel an action without the loss of data
    - o visible and/or intuitive navigation are used to encourage user interaction
    - o the type of navigation chosen supports user task completion
    - o mini-Ias (mini table of contents at the beginning of the page that tell users what the page is about and implement direct access to the various sections), accordions, sticky navigation, and back-to-top buttons are used
    - o users can leave an unwanted state via clearly marked cancel/exit points.
    - o Navigation is discoverable, accessible, consistent, and uses little screen space
    - o visible and related categories are used to maintain a strong information scent
    - o The user knows where he is in the app, how he got there, and where he can go
    - o Navigation uses additional features to complement the search function
- ***UI Navigation & Navigation Elements-Links***

- o links to related content to help the user navigate quickly between similar topics are used
- o recognizable and tappable navigation links are provided
- **UI Navigation & Navigation Elements-Menu-Choices**
  - o menu choice names are consistent within each menu in grammatical style and terminology

## Evaluation of Usability Criteria

After I examined the lowest scoring criteria on each of the six pages, several themes emerged. The criteria category with the most problems per total number of criteria was Navigation followed by Layout/Visual Appearance, Content, and Multimedia/Graphics/Logos.

To understand how each category related to the others, I totaled the scores and calculated the ratio for each usability category and subcategory (see Table 3). The ratio for each category and subcategory was compared against the ratio of the other categories and subcategories. Determining each subcategory's and category's ratio allowed me to compare the effectiveness of one subcategory or category against another and understand which categories need to be improved.

| Category | Ratio |
|---|---|
| 1.0: Content ( C ) | 0.893 |
| 1.1: Data Entry (C-DE) | 1.000 |
| 2.0: Reduce Memory Load (RML) | 0.943 |
| 3.0: Layout/Visual Appearance - General (LVA) | 0.874 |
| 3.1: Layout (LVA-LA) | 0.949 |
| 3.1.1: Lists (LVA-LA-li) | 1.000 |
| 3.1.2: Input Fields (LVA-LA-if) | 0.875 |
| 3.2: Visual Appearance (LVA-VA) | 0.815 |
| 3.3: Colors (LVA-C) | 0.858 |
| 3.4: Typeface (LVA-T) | 0.962 |
| 4.0: Multimedia/Graphics/Logos - General (MGL) | 0.974 |
| 4.1: Images/Logos (MGL-IL) | 0.899 |
| 4.2: Animation (MGL-A) | 1.000 |
| 4.3: Videos (MGL-V) | 0.438 |
| 4.4: Icons (MGL-I ) | 0.988 |
| 4.5: Buttons/Touchable Objects (MGL-BTO) | 0.726 |
| 5.0: System/App Feedback (SAF) | 0.836 |
| 6.0: UI Navigation & Navigation Elements - General (UINNE) | 0.755 |
| 6.1: Types of Navigation (UINNE-ToF) | 0.633 |
| 6.2: Links (UINNE-LI) | 0.699 |
| 6.3: Menus (UINNE-M) | 0.991 |
| 6.3.1: Choices (UINNE-M-ch) | 0.981 |
| 6.3.2: Titles (UINNE-M-ti) | 0.978 |
| 6.3.3: Structure (UINNE-M-st) | 0.938 |
| 6.4: Search Function (UINNE-SF) | 0.648 |
| 6.5: Scrolling (UINNE-S) | 0.375 |
| 7.0: The User (TU) | 0.846 |

TABLE 3: RATIO FOR EACH CATEGORY AND SUBCATEGORY

I then calculated the average ratio (0.847) and plotted all the ratios and their averages (See Figure 2). The ratio for each usability criterion was then compared to the ratios for the other criteria. This visual representation led me to conclude that while the majority of the categories and subcategories were implemented to create a better than average result, the ones that were below average were much farther below average (0.472 points below average).
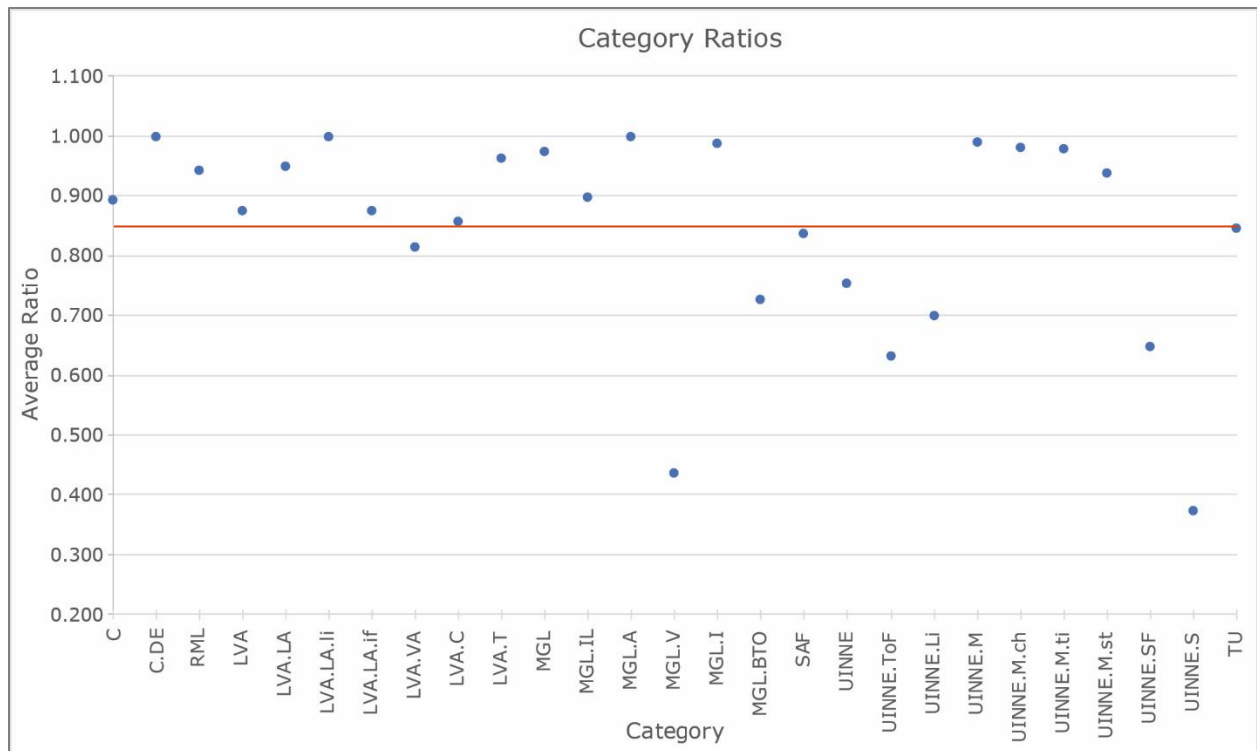
The first step in analyzing the usability criteria averages was to examine the categories that were at or below average. To better understand why each category was at or below average, I needed to find the specific criteria that negatively impacted each average. After gathering the criteria with a ratio of 0.850 or lower, the following list of problem areas emerged:

- ***UI Navigation & Navigation Elements-Scrolling***: 0.375
  - o the system provides tools for filtering items or scrolling faster If the list is too long (0.500)
  - o layouts that require scrolling are avoided (0.250)
- ***Multimedia/Graphics/Logos-Videos***: 0.438
  - o a textual description of what the video is about, and the video length is included (0.500)
- ***UI Navigation & Navigation Elements-Types of Navigation***: 0.633
  - o When using long mobile pages, accordions, sticky navigation, and back-to-top buttons are used (0.25)
  - o content or stories from different content areas of the site are displayed to provide quick access to different sections of the site without accessing navigation. (0.649)
- ***UI Navigation & Navigation Elements-Search Function***: 0.648
  - o local data is live-filtered (narrow results as the user continues to type.) (0.250)
  - o search strings are preserved between searches (0.250)
  - o auto-completion and suggestions are offered to users (0.250)
  - o If the system collected user input information, the user can clear the information that has been input (search history) (0.250)
  - o search results are shown in a comprehensive manner (0.500)

28

- **UI Navigation & Navigation Elements-Links**: 0.699
  - links to related content to help the user navigate quickly between similar topics are used (0.639)
  - A link to the full website is included on the mobile page (0.250)
  - recognizable and tappable navigation links are provided (0.486)
- **Multimedia/Graphics/Logos-Buttons/Touchable Objects**: 0.726
  - Tappable and untappable areas of the app are clearly recognizable. (.828)
  - a back button is offered to go to a previous view without data loss (.351)
  - Touch targets for each headline are fairly large. (0.250)
- **UI Navigation & Navigation Elements-General**: 0.755
  - the system enables users to interact with elements by swiping, gesturing, or pinching instead of only touching the elements (0.250)
  - unnecessary pages, links, buttons, or selections have been removed to make the navigation design more effective. (0.571)
  - users can leave an unwanted state via clearly marked cancel/exit points. (0.644)
  - The user knows where he is in the app, how he got there, and where he can go (0.457)
  - Navigation is discoverable, accessible, consistent, and uses little screen space (0.620)
  - users are given a Logical and predictable Path to Follow (0.466)
  - only one path to each location is provided; exception: if a screen needs to be accessible in different circumstances, provide a modal view (0.457)
  - strong support is provided for comparing items and for switching between recently viewed items (0.245)
  - screens move forward and backward step by step sequentially (0.446)
  - Users can easily reverse their actions or cancel an action without the loss of data (0.466)
  - the user can change the level of detail available (0.250)
  - basic configuration options are provided; expert users are given access to advanced configuration options. (0.250)
  - provide shortcuts to the most frequent tasks and allow their customization and/or definition. (0.260)
  - instructions that are necessary for the user to get started are present (0.583)
  - users are provided with quick access to the navigation and an at-a-glance overview of what the site has to offer. (0.813)
  - visible and related categories are used to maintain a strong information scent (0.322)
  - visible and/or intuitive navigation are used to encourage user interaction (0.481)
  - the type of navigation chosen supports user task completion (0.495)
  - an expand-collapse element for sub-content is provided (0.786)
  - Navigation uses additional features to complement the search function (0.548)
  - mini-ia's (mini table of contents at the beginning of the page that tell users what the page is about and implement direct access to the various sections), accordions, sticky navigation, and back-to-top buttons are used (0.333)
- **Layout/Visual Appearance-Visual Appearance**: 0.815
  - There are visual differences between interaction objects (buttons) and information objects (labels, images). (0.500)
  - a physical, realistic dimension is added to the app when appropriate (0.833)

- o a link to a higher resolution image is offered when the it requires closer inspection (0.250)
- **System/App Feedback**: 0.836
  - o The current status of an icon is clearly indicated. (0.438)
  - o links are recognizable and characterized according to their state (visited, active) (0.627)
  - o feedback to indicate that the next group of actions can be started after the user completes an action (or group of actions) is provided (0.740)
  - o The app makes it clear which dialog the user is in, where he is in the app, and which actions he can take and how to perform them. (0.481)
  - o There is a visual cue when the user scrolls to the boundary of an element (e.g., list view) (0.750)
  - o there is visual feedback in menus or dialog boxes to indicate which choices are selectable (0.559)
- **The User**: 0.846
  - o the page takes into account the user's experience level (expert or novice) with a particular type of device and a specific mobile application, and how it will impact the level of ease in using or understanding the information (0.500)
- **Content**: 0.893
  - o secondary information is placed on subsidiary pages (0.824)
  - o a list of concrete steps to accomplish each task is provided (0.784)
  - o Language is clear, effective, and appropriate (avoid complicated content) (0.774)
  - o information is conveyed in a condensed, headline-type style (0.808)
  - o only information essential to decision making is displayed on the screen (0.841)
  - o captions are used to help convey the meanings of images (0.337)
  - o For first time users, clear and simple instructions that focus on a few features are provided (0.750)
  - o additional explanatory information is provided when an item is ambiguous (0.821)
- **Layout & Visual Appearance–Visual Appearance–Colors** (0.858)
  - o color is used in conjunction with another redundant cue (0.755)
  - o color coding is used for clarity where appropriate (0.310)
- **Layout & Visual Appearance-General** (0.874)
  - o page length is controlled (0.625)
- **Layout & Visual Appearance–Layout–Input Fields** (0.875)
  - o it is easy for users to make a choice (0.750)
  - o the system completes unambiguous partial input (0.250)
  - o the input data is tolerant of typos and offers corrections (0.750)
- **Multimedia/Graphics/Logos–Images/Logos** (0.899)
  - o The logo is meaningful, identifiable, and sufficiently visible (0.264)
- **Layout & Visual Appearance–Layout** (0.949)
  - o the article title is anchored to the top of the screen when content is long and needs scrolling (0.270)
  - o the search box is located on the homepage (0.750)

# Discussion

The analysis of the ratios for individual pages and the resulting analysis of the ratios of usability criteria led me to defining the usability problem areas of the help documentation of

the Evernote's iOS app. These usability problem areas fall into four categories: Overall Design, Navigation, Content, and Media/Graphics/Logos.

## Overall Design

Usability criteria for help documentation that fall under overall design are criteria that are not specific to any one page.

In its current form, *Getting Started* and the *Getting Started Guide* belong to a responsive website where some of the content is applicable to the iOS device and some is not. The existing user experience does not consider the user's ability (expert or novice) with a particular type of device and a specific mobile application, and how it will impact the level of ease in using or understanding the information. Information for four different types of users (basic, plus, premium, and business) and five different platforms (iOS, Android, Windows, Mac, and web) is combined into one help documentation unit.

The user cannot change the level of detail available or configure the help documentation in any way. Instead, the user must sort through all of the content to find the content that is relevant for their situation and maintain a higher memory load as there is no support for comparing items and for switching between recently viewed items. Including all of the content for all user types and platforms in a single location decreases the effectiveness of the overall navigation design.

Another overall design feature that is questionable is whether or not the impact of culture on all aspects of the visual design (layout, colors, images, shapes, icons, etc.) has been considered. According to Evernote, they support users from all over the world in 25 languages by offering a wide selection of help resources including getting started, tips, tutorials, and forums via their website. To be able to able to support that volume of languages and cultures, the process of continuous localization is used to simultaneously support content creation and development. All source development and content are created in English using internationalization. (https://blog.evernote.com/tech/2015/10/15/our-continuous-localization-system-serge-is-now-open-source/) Even though the content is in English, it is important to consider all aspects of the visual design and the cultures connected to the 25 languages that are supported. For example, the color green can represent the following: Western cultures – environmental, envy, and money; Eastern and Asian cultures – nature, youth, and exorcism; Latin American cultures – death; and Middle Eastern cultures – strength, luck, and wealth.

## Navigation

Usable navigation is key to a positive user experience. Unfortunately, Evernote's navigation is not easily discoverable or accessible. The user must constantly go through a trial and error process to determine how things work. For example, moving between different topics is challenging as there are few internal links that allow the user to quickly access different sections of the site without accessing the formal navigational structure. When clicking a link is an option, the plain green text is not always recognizable as a link because of missing visual indicators or a lack information indicating its state (ex. visited or active).

On most pages, it is not possible to go back to the previous page as there is no back button, and the breadcrumb does not return the user to the page they just left. Without a clearly market exit point on the page, the user must choose between starting over or landing in an unknown location that might be accessible from both *Getting Started* and *Using Evernote* or part of an endless loop. When the user lands in that unknown location, they no longer know where they are in the app, how they got there, where they can go, and which actions to

take and how to perform them. Essentially, the user becomes lost with no strategy in place to help them find their way.

There are only two ways to interact with Evernote' help documentation—tapping or scrolling. Swiping, gesturing, and pinching are not options. Because most of the pages have layouts that require a large amount of scrolling, the page title moves out of sight as the user scrolls. This is also a problem with search results as the results are presented as a long list and scrolling and reading are the only way to understand the results. Filtering, accordions, sticky navigation, and back-to-top buttons are not offered as options.

Scrolling is not the only problem with the search function. Text auto-completion and suggestions are not offered to assist users with developing search terms. Search results are not narrowed as the user continues to input a search term, and search strings are not preserved between searches. The system also does not complete unambiguous partial input or offer corrections for typos. Finally, the search feature is missing on the help documentation or support home page.

Issues with accessibility should also be considered. While the color green is one of Evernote's primary brand colors, using the color green to indicate links may be a problem for users who are colorblind. Another factor to consider is that in a number of cases, the color green is used on its own to indicate an action instead of being used with another redundant cue.

### Content

The app's help documentation sections can cause confusion from the start instead of being easily understood. The section names (*Getting Started* and *Getting Started Guide*) are too close to each other and can be mixed up or seen as a single section.

Once inside the help documentation on an iOS device, there is a lot of content that pertains to other platforms and user scenarios that should be reconsidered. At the other end of the spectrum, directions for some tasks do not include a list of concrete steps while others are presented in paragraph form making them challenging to follow. And in other cases, information not essential to decision making is placed on the same page. First time users may be challenged to follow the instructions because they are simple, clear, or formatted uniformly.

Some pages require the user to read multiple paragraphs by scrolling. The content also contains run-ons; clumsy and clunky writing; repeat phrases and sentences; grammar, spelling, and punctuation errors; odd word choice; and unusual terms without a definition. The font type should also be reconsidered when all caps are used. Given mobile device limitations and external environmental distractions, information presented in this manner can be hard to comprehend and remember.

### Media/Graphics/Logos

A visual difference between interaction objects (buttons) and information objects (labels, images) does not always exist. On a number of pages, the user must actively experiment to determine if the area is tappable and expend energy remembering which item does what. I only realized which design features "meant" tappable after I had been working with the help documentation for a while.

Images provide an opportunity to convey information in a way that text does not, but the user needs to know what the image is. All images, except one, were missing captions or

labels. Captions help convey the meaning and purpose of an image. In most cases, a textual description of the video and the video length were also missing. Lastly, the Evernote logo is missing from almost all of the pages in help documentation.

## Recommendations

Based on the ratios for each usability category and subcategory, and how each criterion was implemented, I have developed four recommendations about *Getting Started* and the *Getting Started Guide* in Evernote's iOS help documentation.

1. Reconsider two design aspects that negatively impact the overall design by restructuring the information design to reflect multiple user types, experience levels, and platforms; and by addressing how all aspects of the visual design are connected to the cultures of the 25 languages that Evernote supports. Instead of using green for all 25 languages, I recommend keeping green for North America / Europe, using yellow for Brazil, a muted red for Latin America (minus Brazil), and purple for the Middle East / Asia. As additional changes are made for each region or country, color adjustments should also be considered.

2. Examine and reconsider the information architecture and navigation design of *Help & Learning* by improving the navigation's discoverability, defining a clear path that always informs the user of their location, providing additional tools such as accordions, sticky navigation, and back-to-top buttons to work with long mobile pages, and improving the search function.

   In the image below (Image 18), I have added a back-to-top button to the *Share Notes* page.



—> Scrolling —>          —> Scrolling —>
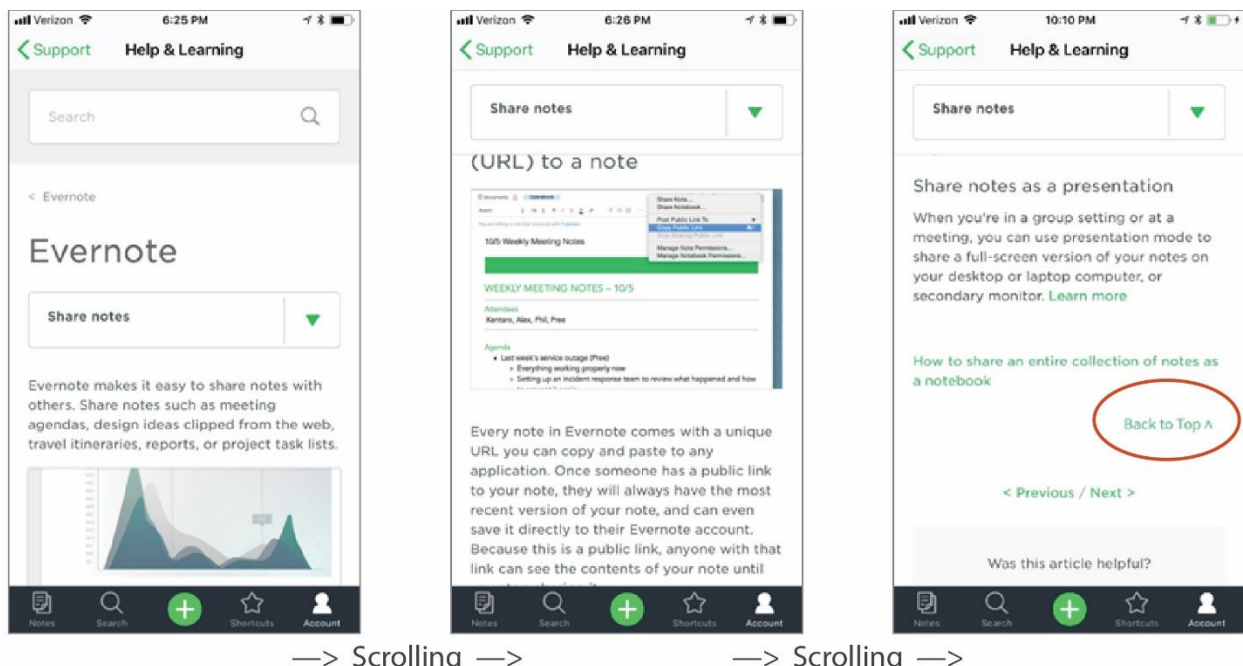
IMAGE 18: REDESIGN EXAMPLE FOR PROBLEM 2

3. Edit content to create an organizational structure that is usable by all users, to ensure clear and consistent word choice and grammatical style, and to present information in a condensed, headline-type style for easy scanning and reduced memory load.

In the image below (Image 19), I have changed the name *Getting Started Guide* to *Start Here*. By keeping the name generic, it can be used with all Evernote platforms.
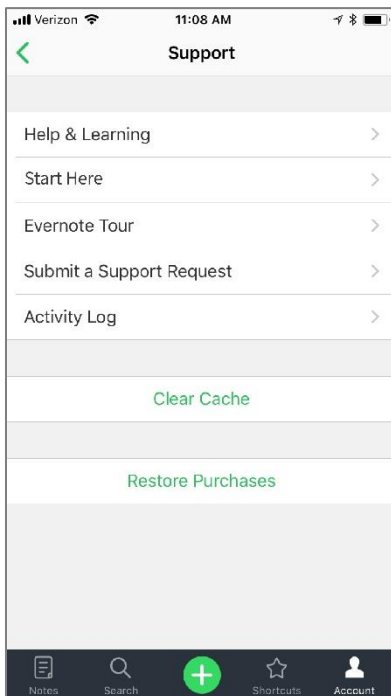


IMAGE 19: REDESIGN EXAMPLE FOR PROBLEM 3

4. Re-examine the visual design as it pertains to media, graphics, logos, and color by including visual clues in addition to color to indicate which elements are interaction objects (buttons) or information objects (labels, images), and providing labels and descriptions for images and videos. Caution: be aware of cultural meanings when choosing colors and shapes.

In Image 20, I have removed the green triangles next to "Learn more" to match the green links found throughout the help documentation. I also changed the text "Title your note" from green to gray to remove any uncertainty about whether the text is a link.
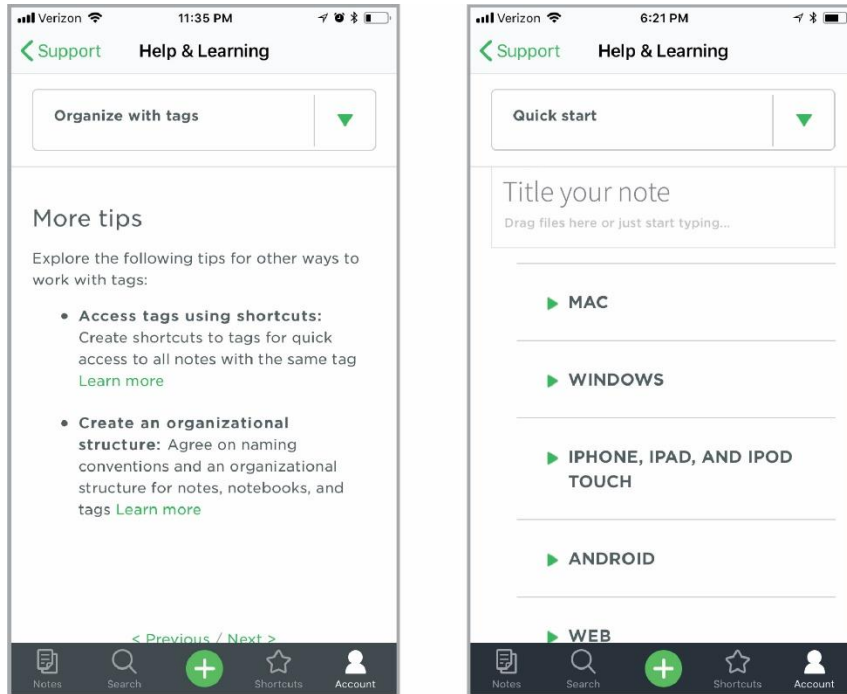
IMAGE 20: REDESIGN EXAMPLE FOR PROBLEM 4

Finally, perform additional user testing before the updated product is released.

# Future Directions

Making the recommended changes will likely improve usability of the help documentation which can improve the overall user experience of the Evernote iOS application. At this point in time, however, there is not enough research available to be able to determine how usable an app's help documentation is by its ratio alone. The degree of success of the user experience should also be approached from the perspective of a variety of user groups such as the novice user or the expert and from each of the platforms that offer Evernote. Frequent usability testing, focus groups and user surveys, wireframes and persona-based inspections should also be performed.

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# APPENDICES

# APPENDIX A

## *Using Evernote* Page Legend

00 = Support

A = Evernote *Help & Learning*

1 = *Help & Learning / Getting Started*
2 = *Help & Learning /* Using Evernote - *using limited pages*

B = *Getting Started Guide*

*C = Evernote Tour - not using*
*D = Submit a Support Request - not using*

*E = Activity Log - not using*

| | | |
|---|---|---|
| A | *Help & Learning* home page | |
| 1.0 | *Getting Started* - (Choose product) | |
| 1.0.1 app only | Evernote (page title with links) | |
| 1.1.0 | Quick start | |
| 1.2.0 | Take notes | |
| 1.2.1/2.1.2 | How to delete notes and manage Trash | |
| 1.2.2/2.1.35 | How to make a checklist | |
| 1.2.3/1.2.3.2.1/2.1.10 | How to use reminders | |
| 1.2.3.2/1.6.3.1.1.3/2.1.22 | *How to add a reminder through email* | |
| 1.2.3.2.1/1.2.3/2.1.10 | *How to use reminders* | |
| 1.2.3.3/1.6.3.1.1.3.1/2.1.14 | *How reminders work in joined and business notebooks* | |
| 1.2.4/2.1.20 | How to annotate images and PDFs in Evernote | |
| 1.2.5/2.1.3 | How to save email into Evernote | plus and premium only |
| 1.3.0 | Organize with notebooks | |
| 1.3.1/2.1.37 | How to organize notebooks into stacks | |
| 1.3.2/1.4.2/2.1.31 | Tips for organizing notes, notebooks, and tags | |
| 1.3.2.1/1.4.2.1/2.1.1 | *How to organize notes into different notebooks* | |
| 1.3.2.1.1/1.3.2/1.4.2/2.1.31 | *Tips for organizing notes, notebooks, and tags* | |
| 1.3.2.2/1.4.0 | *Organize with tags* | |
| 1.3.2.2.1/1.4.1/1.5.7/2.4.7 | *How to create shortcuts* | |
| 1.3.2.2.1.1/1.5.6/2.4.2 | *How to create a saved search* | |
| 1.3.2.2.1.1.1/1.4.1.2/1.5.8/1.5.1 /2.4.1 | *How to use Evernote's advanced search syntax* | |
| 1.3.2.2.1.1.2/1.4.1.1/2.4.5 | *What's the difference between a tag and a saved search?* | |
| 1.3.2.2.2/1.3.2/1.3.2.1.1/1.4.22. 1.31/2.1.31 | *Tips for organizing notes, notebooks, and tags* | |
| 1.4.0/1.3.2.2/1.4.2.2 | Organize with tags | |
| 1.4.1/1.5.7/1.3.2.2.1/2.4.7 | How to create shortcuts | |
| 1.4.1.1/1.3.2.2.1.1.2/2.4.5 | *What's the difference between a tag and a saved search?* | |
| 1.4.1.2/1.5.8/1.5.1/1.3.2.2.1.1.1 /2.4.1 | *How to use Evernote's advanced search syntax* | |

| | |
|---|---|
| 1.4.2/1.3.2/1.4.2.1.1/2.1.31 | Tips for organizing notes, notebooks, and tags |
| *1.4.2.1/1.3.2.1/2.1.1* | *How to organize notes into different notebooks* |
| *1.4.2.1.1/1.4.2/1.3.2/2.1.31* | *Tips for organizing notes, notebooks, and tags* |
| *1.4.2.2/1.4.0/1.3.2.2* | *Organize with tags* |
| 1.5.0 | Find what you need |
| 1.5.1/1.5.8/1.4.1.2/1.3.2.2.1.1.1 /2.4.1 | How to use Evernote's advanced search syntax |
| 1.5.2/2.1.39 | How to save note location information |
| 1.5.6/1.3.2.2.1.1/2.4.2 | How to create a saved search |
| 1.5.7/1.4.1/1.3.2.2.1/2.4.7 | How to create shortcuts |
| 1.5.8/1.5.1/1.4.1.2/1.3.2.2.1.1.1 /2.4.1 | How to use Evernote's advanced search syntax |
| 1.6.0/1.7.1/1.7.3.1 | share notes |
| 1.6.1/2.2.6 | How to use iMessage to share notes |
| *1.6.3.1.1/2.1.11* | *How to use note links to connect between notes* |
| *1.6.3.1.1.2/2.2.4* | *How to share notes via email* |
| *1.6.3.1.1.3/1.6.3.1.1.3.2.1/2.1.1 0* | *How to use reminders* |
| *1.6.3.1.1.3.1/1.2.3.3/2.1.41* | *How reminders work in joined and business notebooks* |
| *1.6.3.1.1.3.2/1.2.3.2/2.1.22* | *How to add a reminder through email* |
| *1.6.3.1.1.3.2.1/1.6.3.1.1.3/2.1.1 0* | *How to use reminders* |
| 1.6.4/1.7.0 | share notebooks |
| 1.7.0/1.6.4 | share notebooks |
| 1.7.1/1.6.0/1.7.3.1 | share notes |
| 1.7.3/2.1.6 | What happens when multiple users edit the same note? |
| *1.7.3.1/1.7.1/1.6.0* | *Share notes* |
| B/2.5.15 | Welcome to Evernote for iPhone, iPad, and iPod Touch |

# APPENDIX B

ORIGINAL ANALYSIS DATA

See the attached Excel file.

# APPENDIX C

## PAGE DATA CALCULATIONS

Average = 0.830

### A

| | Column Labels | | | | | | Page Data Score | Percentage |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| Count of Usability Criteria | 115 | 23 | 19 | 25 | 133 | 315 | | |
| | | 92 | 76 | 100 | 532 | 800 | 668 | 0.835 |

### 1.0

| | Column Labels | | | | | | Page Data Score | Percentage |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| Count of Usability Criteria | 106 | 29 | 13 | 19 | 148 | 315 | | |
| | | 116 | 52 | 76 | 592 | 836 | 704 | 0.842 |

### 1.0.1

| | Column Labels | | | | | | Page Data Score | Percentage |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| Count of Usability Criteria | 127 | 31 | 17 | 18 | 122 | 315 | | |
| | | 124 | 68 | 72 | 488 | 752 | 607 | 0.807 |

### 1.1.0

| | Column Labels | | | | | | Page Data Score | Percentage |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| Count of Usability Criteria | 105 | 25 | 8 | 17 | 160 | 315 | | |
| | | 100 | 32 | 68 | 640 | 840 | 732 | 0.871 |

### 1.2.0

| | Column Labels | | | | | | Page Data Score | Percentage |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| Count of Usability Criteria | 91 | 18 | 7 | 29 | 170 | 315 | | |
| | | 72 | 28 | ## | 680 | 896 | 799 | 0.892 |

### 1.2.1

| | Column Labels | | | | | | Page Data Score | Percentage |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| Count of Usability Criteria | 116 | 34 | 8 | 18 | 139 | 315 | | |
| | | 136 | 32 | 72 | 556 | 796 | 660 | 0.829 |

### 1.2.2

| | Column Labels | | | | | |
|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | Grand Total |
| Count of Usability Criteria | 122 | 36 | 8 | 10 | 139 | 315 |

|  |  | 144 | 32 | 40 | 556 | 772 | 638 | 0.826 |

**1.2.3**

| Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total |
|---|---|---|---|---|---|---|
| Count of Usability Criteria | 141 | 29 | 10 | 13 | 122 | 315 |

|  |  | 116 | 40 | 52 | 488 | 696 | 576 | 0.828 |

**1.2.3.2**

| Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total |
|---|---|---|---|---|---|---|
| Count of Usability Criteria | 145 | 28 | 10 | 12 | 120 | 315 |

|  |  | 112 | 40 | 48 | 480 | 680 | 564 | 0.829 |

**1.2.3.2.1**

| Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total |
|---|---|---|---|---|---|---|
| Count of Usability Criteria | 141 | 29 | 10 | 13 | 122 | 315 |

|  |  | 116 | 40 | 52 | 488 | 696 | 576 | 0.828 |

**1.2.3.3**

| Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total |
|---|---|---|---|---|---|---|
| Count of Usability Criteria | 153 | 32 | 10 | 18 | 102 | 315 |

|  |  | 128 | 40 | 72 | 408 | 648 | 514 | 0.793 |

**1.2.4**

| Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total |
|---|---|---|---|---|---|---|
| Count of Usability Criteria | 112 | 35 | 15 | 10 | 143 | 315 |

|  |  | 140 | 60 | 40 | 572 | 812 | 667 | 0.821 |

**1.2.5**

| Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total |
|---|---|---|---|---|---|---|
| Count of Usability Criteria | 130 | 29 | 16 | 16 | 124 | 315 |

|  |  | 116 | 64 | 64 | 496 | 740 | 605 | 0.818 |

**1.3.0**

| Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total |
|---|---|---|---|---|---|---|
| Count of Usability Criteria | 124 | 21 | 17 | 21 | 132 | 315 |

|  |  | 84 | 68 | 84 | 528 | 764 | 646 | 0.846 |

**1.3.1**

| Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total |
|---|---|---|---|---|---|---|

| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Count of Usability Criteria | 123 | 34 | 12 | 17 | 129 | 315 | | |
| | | 136 | 48 | 68 | 516 | | 768 | 625 | 0.814 |
| 1.3.2 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 144 | 28 | 9 | 15 | 119 | 315 | | |
| | | 112 | 36 | 60 | 476 | | 684 | 567 | 0.829 |
| 1.3.2.1 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 131 | 28 | 11 | 21 | 124 | 315 | | |
| | | 112 | 44 | 84 | 496 | | 736 | 609 | 0.827 |
| 1.3.2.1.1 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 144 | 28 | 9 | 15 | 119 | 315 | | |
| | | 112 | 36 | 60 | 476 | | 684 | 567 | 0.829 |
| 1.3.2.2 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 121 | 21 | 8 | 18 | 147 | 315 | | |
| | | 84 | 32 | 72 | 588 | | 776 | 679 | 0.875 |
| 1.3.2.2.1 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 128 | 28 | 10 | 23 | 126 | 315 | | |
| | | 112 | 40 | 92 | 504 | | 748 | 621 | 0.830 |
| 1.3.2.2.1.1 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 143 | 28 | 14 | 21 | 109 | 315 | | |
| | | 112 | 56 | 84 | 436 | | 688 | 555 | 0.807 |
| 1.3.2.2.1.1.1 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 139 | 28 | 12 | 13 | 123 | 315 | | |
| | | 112 | 48 | 52 | 492 | | 704 | 583 | 0.828 |
| 1.3.2.2.1.1.2 | Column Labels | | | | | | | | |

| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | Count of Usability Criteria | 144 | 32 | 11 | 14 | 114 | 315 | | |
| | | 128 | 44 | 56 | 456 | | 684 | 552 | 0.807 |
| 1.3.2.2.2 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 144 | 28 | 9 | 15 | 119 | 315 | | |
| | | 112 | 36 | 60 | 476 | | 684 | 567 | 0.829 |
| 1.4.0 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 121 | 21 | 8 | 18 | 147 | 315 | | |
| | | 84 | 32 | 72 | 588 | | 776 | 679 | 0.875 |
| 1.4.1 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 128 | 28 | 10 | 23 | 126 | 315 | | |
| | | 112 | 40 | 92 | 504 | | 748 | 621 | 0.830 |
| 1.4.1.1 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 144 | 32 | 11 | 14 | 114 | 315 | | |
| | | 128 | 44 | 56 | 456 | | 684 | 552 | 0.807 |
| 1.4.1.2 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 139 | 28 | 12 | 13 | 123 | 315 | | |
| | | 112 | 48 | 52 | 492 | | 704 | 583 | 0.828 |
| 1.4.2 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 144 | 28 | 9 | 15 | 119 | 315 | | |
| | | 112 | 36 | 60 | 476 | | 684 | 567 | 0.829 |
| 1.4.2.1 | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 131 | 28 | 11 | 21 | 124 | 315 | | |
| | | 112 | 44 | 84 | 496 | | 736 | 609 | 0.827 |

| 1.4.2.1.1 | Column Labels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | |
| | Count of Usability Criteria | 144 | 28 | 9 | 15 | 119 | 315 | |
| | | 112 | 36 | 60 | 476 | | 684 | 567 | 0.829 |

| 1.4.2.2 | Column Labels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | |
| | Count of Usability Criteria | 121 | 21 | 8 | 18 | 147 | 315 | |
| | | 84 | 32 | 72 | 588 | | 776 | 679 | 0.875 |

| 1.5.0 | Column Labels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | |
| | Count of Usability Criteria | 127 | 22 | 16 | 22 | 128 | 315 | |
| | | 88 | 64 | 88 | 512 | | 752 | 632 | 0.840 |

| 1.5.1 | Column Labels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | |
| | Count of Usability Criteria | 139 | 28 | 12 | 13 | 123 | 315 | |
| | | 112 | 48 | 52 | 492 | | 704 | 583 | 0.828 |

| 1.5.2 | Column Labels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | |
| | Count of Usability Criteria | 148 | 41 | 12 | 15 | 99 | 315 | |
| | | 164 | 48 | 60 | 396 | | 668 | 506 | 0.757 |

| 1.5.6 | Column Labels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | |
| | Count of Usability Criteria | 143 | 28 | 14 | 21 | 109 | 315 | |
| | | 112 | 56 | 84 | 436 | | 688 | 555 | 0.807 |

| 1.5.7 | Column Labels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | |
| | Count of Usability Criteria | 128 | 28 | 10 | 23 | 126 | 315 | |
| | | 112 | 40 | 92 | 504 | | 748 | 621 | 0.830 |

| 1.5.8 | Column Labels | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | |
| | Count of Usability Criteria | 138 | 28 | 12 | 13 | 124 | 315 | |

| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 112 | 48 | 52 | 496 | 708 | 587 | 0.829 |
| **1.6.0** | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 120 | 22 | 17 | 20 | 136 | 315 | | |
| | | | 88 | 68 | 80 | 544 | 780 | 660 | 0.846 |
| **1.6.1** | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 135 | 38 | 9 | 11 | 122 | 315 | | |
| | | | 152 | 36 | 44 | 488 | 720 | 577 | 0.801 |
| **1.6.3.1.1** | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 128 | 30 | 14 | 20 | 123 | 315 | | |
| | | | 120 | 56 | 80 | 492 | 748 | 610 | 0.816 |
| **1.6.3.1.1.2** | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 116 | 31 | 9 | 14 | 145 | 315 | | |
| | | | 124 | 36 | 56 | 580 | 796 | 671 | 0.843 |
| **1.6.3.1.1.3** | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 140 | 29 | 10 | 12 | 124 | 315 | | |
| | | | 116 | 40 | 48 | 496 | 700 | 581 | 0.830 |
| **1.6.3.1.1.3.1** | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 153 | 32 | 10 | 18 | 102 | 315 | | |
| | | | 128 | 40 | 72 | 408 | 648 | 514 | 0.793 |
| **1.6.3.1.1.3.2** | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
| | Count of Usability Criteria | 145 | 28 | 10 | 12 | 120 | 315 | | |
| | | | 112 | 40 | 48 | 480 | 680 | 564 | 0.829 |
| **1.6.3.1.1.3.2.1** | Column Labels | | | | | | | | |
| | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |

|  | | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|---|---|---|---|---|---|---|---|---|---|
|  | Count of Usability Criteria | 140 | 29 | 10 | 12 | 124 | 315 | | |
|  | | 116 | 40 | 48 | 496 | | 700 | 581 | 0.830 |
| 1.6.4 | Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|  | Count of Usability Criteria | 116 | 23 | 16 | 23 | 137 | 315 | | |
|  | | 92 | 64 | 92 | 548 | | 796 | 672 | 0.844 |
| 1.7.0 | Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|  | Count of Usability Criteria | 116 | 23 | 16 | 23 | 137 | 315 | | |
|  | | 92 | 64 | 92 | 548 | | 796 | 672 | 0.844 |
| 1.7.1 | Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|  | Count of Usability Criteria | 120 | 22 | 17 | 20 | 136 | 315 | | |
|  | | 88 | 68 | 80 | 544 | | 780 | 660 | 0.846 |
| 1.7.3 | Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|  | Count of Usability Criteria | 142 | 27 | 14 | 16 | 116 | 315 | | |
|  | | 108 | 56 | 64 | 464 | | 692 | 567 | 0.819 |
| 1.7.3.1 | Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|  | Count of Usability Criteria | 120 | 22 | 17 | 20 | 136 | 315 | | |
|  | | 88 | 68 | 80 | 544 | | 780 | 660 | 0.846 |
| B | Column Labels | 0 | 1 | 2 | 3 | 4 | Grand Total | | |
|  | Count of Usability Criteria | 140 | 31 | 13 | 9 | 122 | 315 | | |
|  | | 124 | 52 | 36 | 488 | | 700 | 572 | 0.817 |