1. Looking in the display settings in my iPhone I see that there are a number of accessibility options there. Right away I see the light or dark screen option as well as the brightness selector, which is a sliding selector. These are great for accessibility for every user from people with permanent vision issues to people who just happen to have tired or strained eyes on any given day. The fact that there are options that you can select to have the phone automatically adjust the brightness for you or change from light to dark mode at certain times of day automatically is great. This for sure makes the iPhone user experience easier and more seamless when adjustments can be made based on the time of day or surrounding brightness without the user having to go into the settings to manually adjust. Of course, having the option to manually adjust at any time is also very important.

In the display settings I also see a text size selector where a user can increase or decrease just the text size on their screen. There is also a bold option which will bold all the text. These are both great ways to make text more readable for users. Having the scroll bar sizing option for the text is a good way to provide a larger range of text sizes for users to choose from, depending on their individual needs.

There is also a display zoom option you can select to zoom in the entire view on your screen to make everything larger, not only text. The app icons, text, buttons, input fields, everything is larger. This option only has two options, zoom and standard, to choose from so it’s less customizable than the text size selector. I think having the same scrollbar type selector that they used for the text size would be a great option that could be added to the display zoom selector. Having something a little more customizable that would incrementally zoom the screen in or out as the marker moves along the scroll bar would give more range and options to people who require a zoomed in screen. I’m sure there are design and development implications to something like that, so perhaps Apple decided it wasn’t feasible for whatever reason. But as an end user, that’s something I would appreciate having and I think it would be helpful to people with various vision limitations. I do see that there is a separate accessibility menu in the settings with an entire zoom section that can be customized in various ways which is great. But I still think a simple slider to control the zoom would be a really nice, quick and easy option for users to easily customize their zoom if they don’t require the additional special settings available in the accessibility menu.

Something that I didn’t find in my settings is a way to change the little oval shaped green toggle selector that they use for turning most things on and off in the iPhone settings. As a user without any permanent mobility issues, I find this toggle selector to be difficult to use sometimes and end up having to touch it multiple times before it actually toggles, which is frustrating. For someone with mobility issues or hand tremors I can only imagine how that frustration would be magnified. I think it would be a good idea for iPhones to have an option to change that toggle selector to something else that isn’t as finicky and small. Maybe the alternative option could be a larger radio button that has more surface area for the user to touch and still get the selector result. Or even the entire box around the text option you are selecting for could be the touchpad and anywhere the user touches within that box could activate the on/off functionality. Anything that has a larger surface area and is less fussy than the existing toggle would probably help some users out a lot. The display zoom feature does make the existing toggles bigger when the zoom option is selected, but in my opinion having the option to change those toggles entirely to something more accessible would be an even better way to do it.

When I look in the accessibility menu in my iPhone settings there is an impressive number of options for people with all sorts of accessibility needs. There are way too many to discuss here and it’s obvious that Apple has put a lot of time and effort into making iPhones accessible, which is fantastic. Hopefully they will continue to adapt and evolve their iPhone accessibility based on user experience and feedback as time goes on.

1. In Ease of Access setting, I can see there are visions, hearing, and interaction section. All three sections cover visual, motor, auditory, speech, or cognitive disabilities accessibilities.

In visions section, we can change text size, change brightness of display, simplify and personalize windows, change mouse pointer settings (size, colour, and touch feedback), change text cursor indicator and appearance, adjust magnifier zoom levels, change magnifier view, change magnifier reading settings, enable color filters, activate colorblind filters, turn on high contrast mode, choose high contrast theme and change different narrator settings.

In hearing, we can change audio settings for easier hearing and adjust different captions settings.

Under Interaction, we can turn on speech recognition, enable the on-screen ease of access keyboard, enable filter keys or modify keyboard shortcuts, control mouse with a keypad, and control mouse with eyes.

In my opinion, close caption under hearing section is missing selection of caption placement. It looks like default position is always at the bottom of the screen for any window operating system. Some videos might have important visual elements at the bottom of the screen. Having only bottom placement option for close caption can block significant visual content.

In the past, When I turn on high contrast and selected High Contrast White theme from the choose a theme drop-down, it turned everything very bright for me. I found the option not aesthetically pleasing. I am sure if a light sensitive user selects this option, it will blind them and thus find even difficult to turn off the option. In my view, it is missing the preview of selection and apply for high contrast theme.

Based upon my experience, I recommend having high contrast themes sample preview before allowing users to apply the contrast across all windows. This allows all users including light sensitive users to distinguish appropriate theme for them.

Also, windows should have some intelligence to find if the caption is obstructing something important on the screen and position the caption either top or the bottom of the screen accordingly.

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1. Asus Laptop: Windows 11 OS -

Accessibility feature to assist users with disabilities with blind or low vision is Narrator which is the built-in screen reader that reads text on your screen aloud. The narrator can be toggled on or off easily and be turned on by pressing the keys  ctrl+Windows logo key + N. Another way to search the narrator app is under the start button search bar.

 The next accessibility feature is under System preferences as Display have various options: Monitors, Brightness, Night light, and Scale Layout.

The display has accessibility options such as Brightness and colour. Screen brightness can be adjusted by moving the slider on each side to adjust the brightness. Some Windows PCs can also adjust the screen brightness automatically based on content. If you still need to adjust it, can easily be done manually. There is also a checkbox available to save battery life: Labelled as Help improve battery by optimizing the content shown and brightness. You can select the check box to turn this back on or off at any time. HDR (high dynamic range) setting is used for brighter and more vibrant pictures, games, videos and apps as per monitor or laptop display.

The next Display setting is a Night light with a toggle switch for on or off. The night light is a great feature to show warmer colours on display to help with sleep. Night Light mode reduces blue light. You can also either select Sunset to sunrise or select Set hours and enter custom times for the night light to turn on and off.

Scale & layout settings in windows allow you to:

* Resize the text in apps & other items with drop-down options such as 100%,125% and 150% (recommended) which is best for the current screen display. If it's changed from recommended settings, the content might appear blurry or pixelated.
* Set Display resolution with drop-down options as 1920 X 1080 (recommended),1680X1050 etc. & Display orientation as Landscape, portrait. You can easily change screen resolution compatible with your monitor or laptop.
* Set the refresh rate: a higher rate gives smoother motion and also uses more power .
* Custom scale the text: is between 100% and 500% and not recommended. All display is to default scaling size. There is a warning given in yellow on this screen with advice to not change these settings unless it is required and can cause text and apps to become unreadable. Under advanced settings, there is an additional feature for adding multiple monitors and the brightness, scaling, and settings can be adjusted for additional connected screens.

Overall I found that accessibility options are easy to navigate and customize as per your preference. Windows 10 display scaling is handled by the OS well, as long as resolutions are proportionally the same. Scaling helps people who have difficulty seeing smaller text and images by increasing their size for a better experience. When you are using the laptop for playing games or visiting a website that is displayed in a certain resolution, Windows OS allows you to customize your screen resolution for better display. It also lets you revert changes back any time.

I was able to access display settings in past by following these steps:

* **To find the display settings on windows, right-click on the desktop and choose a menu to access display settings.**
* **The second option is to click on the windows icon and look for  Settings under menu and System and further click on  Display.**
* **The third way to find it is to, Select Search on the taskbar, and type  system settings to access the display.**
* **An easier way to locate it on windows 11 OS is to provide the option to pin it to the start menu or the taskbar so it can be easily accessed and located.**

Windows OS also provides a get help support database feature under the start button to search for any windows related terms and provides step-by-step instructions for completing any task in Windows. There is also a search box on the taskbar to search a question or keyword for any windows setting or apps to get help from the web.

1. ***Device:***Samsung s21 Ultra

***First Observation:*** When I went searching for the display settings within the settings app of my phone I came across the accessibility settings. I decided it would be best to go through this section since all the accessibility settings were all grouped here together. Within this section there are several accessibility options. There are talk back, visibility enhancements, hearing enhancements, interaction and dexterity and other advanced settings touching on every aspect of digital accessibility. The accessibility settings also had a section for recommended settings for myself!

***Talk Back:*** Provides spoken feedback so that you can use your device without looking at the screen. This is intended for situations or people who have difficulty seeing the screen.

***Visibility Enhancements:*** Options for high contrast themes, fonts and keyboards. Further in this section you can also adjust size of fonts, activate magnification shortcuts and screen zoom for objects so it’s easier for the user to visibly see everything clearly on their screen.

***Hearing Enhancements:*** This section provides live transcribing and caption options, hearing aid/amplify support and adaptation to sound settings. The adapt sound setting can allow you to adjust the frequency of sounds to accommodate the user's hearing according to their age.

***Interaction and Dexterity:*** For users that struggle with mobility can use this section to make navigating easier. Within this section you can activate a universal switch, use voice access to control the phone and adjust touch settings. The touch settings are quite extensive giving the user tap duration, touch and hold delay options.

***Personal Experience:*** In the past I have struggled with eye strain from the brightness of screens which would often give me migraines. Now I rarely deal with migraines because most devices now offer dark modes and extra dimming options. My device is great for this, my whole OS is in dark mode and in the evening my phone is preset to dim and warm the screen to reduce eye strain.

***Overview:*** I’m very impressed with the interaction and dexterity settings on my device, specifically the the voice access and touch settings. I would recommend it for users that have hand tremors or struggle with fine motor skills. I have a friend who has cerebral palsy who struggles to select things on her screen because of her hand tremors. She often gets frustrated because she always select the wrong things or the screen is too sensitive. It takes her a long time to do a simple task on her phone. I think suggesting this to her will help her significantly and make her user experience a more enjoyable one.

1. Samsung Galaxy S22

**First Observations**

Accessibility options were easily found by going to Settings and then Accessibility. This screen provides a number of settings:

**TalkBack** - This provides spoken feedback so that users can use the device without looking at the screen, which is intended for people or situations where it is difficult to see the screen. There is also a guide on how to use this option.

**Visibility enhancements** - There are a number of options here to adjust the contrast and colours of the display, fonts and buttons, to remove any animations and motion blurring, and to change the font size or style and magnification options.

**Hearing enhancements** - The settings here allow the user to transcribe speech to text, to detect speech from the device and generate captions, notify the user of any specific external sounds in their environment and amplify them, connectivity options for Bluetooth hearing aids, adapt sounds for sensitive hearing or age, or to change speaker and headphone balance.

**Interaction and dexterity** - These options allow a user to change how they might interact with their device, such as displaying a menu of easy-to-reach buttons to replace hardkeys and gestures, using voice commands to open apps, tap buttons, type or scroll, change how a call is answered or ended, how long touch or tap interactions are and if repeated touches should be ignored within a certain amount of time.

Personally I have not had many issues with my device's accessibility in the past. However, one recent experience I had was with how it would erase text when holding down the backspace key. Previously, once the backspace key was held down for several seconds, text deletion would speed up, making it very difficult to erase only the text that I wanted to delete. I was able to adjust this setting using the accessibility options found on my phone. I have also used hands free and text to speech options to schedule events and dictate text to my phone.

I found this device to have a lot of options when it comes to accessibility for users with permanent or temporary disabilities and for those that would like to use these options to enhance their experience.

1. looking at my Google Pixel 6 phone accessibility menu I see there is a lot of options

Screen Reader - the option to read aloud the items on the screen. there is also select to speak where I can select the text  I want to hear read aloud

Display menu there are many options for the text and display to change the size and view of the font, change the screen brightness and even an option to go "extra dim" (going past the phone minimum brightness). there is also a magnification menu to zoom in on any content on my screen

Captions menu I have access to "live caption" - automatically caption speech on my device, or I can live transcribe to show speech to text in conversations around me

Sounds- there is a sound notification option to alert me when there is sounds around me like a baby crying or a smoke alarm. I can also pair hearing aids to my phone and amplify sounds through regular headphones.

Overview - within all of these options there is also sub-menus to really fine tune the level of accessibility needed. I  find this very nice because I can see uses for a fully abled person to use some of these options just for ease of use and also someone with a physical or cognitive disability can toggle more options and enhance their experience

for me I always turn on dark mode and change the font size to be smaller than that default as this helps with the strain on my eyes and prevents headaches for me. as well I love the caption options and speech to text options. I use those frequently

I don't have must suggestions as I honestly hadn't taken a deep look at the accessibility menu before. I usually just adjust my display and move on. so most of this list is a new discovery for me. I was pleasantly surprised and I think its a really good list of options available

1. The accessibility options available for the iPhone 11 are vast. First thing you can do is go to Display & Brightness in the settings. Here you can toggle between both Light and Dark appearance, which turns your entire screen to white or black and certain elements to have more contrast or blend in with the screen a bit. I prefer the Dark mode as I find it easier on my eyes in most scenarios. Also, Text size and Bold Text can be toggled by sliding the toggle to increase or decrease the size of the text on your screen and how thick you'd like your letters to appear. All of these features are very easy to navigate and adjust to your own preference.

In the Accessibility settings tab there are 3 main focuses to hone in the users preferences: Vision, Physical and Motor, and Hearing.

Vision has multiple options for visual impairment. VoiceOver allows you to hear what is on the screen when buttons are clicked. Zoom magnifies the entire screen and by tapping three fingers you can zoom and  move the screen. Display and Text Size again, lets you bold your text and enlarge your text, Turn on button shapes (underlines text) and have On/Off Labels ( I for on and o for off). The contrast can be increased or decreased by inverting colours, reducing the intensity of bright colours, and using the auto-Brightness toggle which will adjust the levels depending on the amount of light the screen detects while using the phone. Another function is Spoken Content. This function allows the user to have text spoken to them by clicking the text and to swipe the entire screen which then is read to the user. Audio Descriptions can be enabled and this function will automatically play audio descriptions when available.

Physical and Motor allow the user to adjust settings for numerous accessibility needs. Switches can be highlighted on screen, touch, haptic touch and voice control for better usability. And external Keyboard functions to control the phone for users with very limited dexterity.

Hearing allows users to use hearing devices (hearing aids) and Headphones via Bluetooth or plugin, along with Closed Captioning and TTY functions for the hearing impaired.

Apple has created a very user friendly environment and has really taken their time developing its software for all accessibility needs. I have not yet had any issues with the OS of any of my apple products. In my opinion, the Apple iPhone has great accessibility and is easy to use.

1. My Samsung OS seems very good for accessibility. Just in the Display settings alone, I have found some really interesting ideas that I did not know existed. It has choices for eye comfort, full screen apps, motion smoothness, touch sensitivity, etc.   
     
   One of the most interesting choices is a mode called 'Easy Mode' where it changes the layout to be more user friendly overall. It makes all of the items onscreen bigger. It has longer touch-and-hold delays. I think the coolest thing about it though is that it has a high contrast keyboard so it is easier to see when typing. In the video, they mentioned keyboard usability to be one of the biggest barriers for people with disabilities. I like that Samsung has obviously thought about this greatly.   
     
   I have not had trouble with usability in the past but I have worked/work with people with disabilities and see how it enriches their lives when designed properly. It can also be extremely difficult and frustrating when it does not work properly. It did not surprise me that there is a large amount of money in designing for disabilities as technology can be extremely useful in making life easier.   
     
   My only recommendation is to make the settings button easier to access. I had to go into my menu options to get it. I know a few people who struggle with usability and I think that they would have a much easier time if they were aware of some of the simple changes they could make to make the device more usable.
2. The options that my iPhone 12 Pro have under the screen option are related to the appearance, brightness, and display zoom, which I found very helpful because gives the user the option to choose whatever they feel more comfortable while using this product; personally, I like to have the Night Shift option on and that way my eyes do not hurt at night time, while the other options such as bold text, zoomed screen, or the text size I just have it in regular mode while my mother has it with a bigger and bold text.

In the Accessibility option I have found 4 different features: Vision, Physical and Motor, Hearing, and General, and to be honest, I was surprised about all these features in my phone.

* **Vision:** Under this section I am able to see 6 different options: VoiceOver, Zoom, Display & Text Size, Motion, Spoken Content, and Audio Description. Each of these have their different settings, for example if I select the VoiceOver commands it will speak items on the screen and provide helpful hints. It has basic navigation, and I can use it with simple gestures like tap once to select an item, or double tap to activate the selected item. I can change the speaking rate: fast or slow, select the voice and type of pronunciation I want, modify the touch gestures, and turn on the Braille option as well.
* **Physical and Motor:** There are seven categories under the Physical and Motor Accessibility section, these categories help someone with some type of motor disability. This can be done by changing multi-touch gestures, Face ID & Attention, Switch Control, Switching to voice control, Sice Button, or connecting external devices (Apple TV remote or Keyboards). For example,  the Voice Control option will allow you to use your iPhone with just your voice. You are able to choose your preferred language and customize what command performs what function on your phone.
* **Hearing:** This option allows your phone to connect to Made for iPhone hearing aids to assist deaf and hard-of-hearing users.iPhone provides 5 different options under this category: Hearing devices, Sound Recognition, TTY, Audio/Visual, Subtitles & Captioning. One of the options that I like is under “Audio/Visual” where I can turn on the LED flash for alerts, and that way every time I’ll get a text or call while my phone is in silent because I am in a meeting or something similar, I am able to see that I got a notification because of the visual LED flash effect.
* **General:** This last category includes 4 options: Guide Access, Siri, Accessibility Shortcut, and Per-App Settings. For example the Guided Access option prevents the user from leaving an app. I believe it is helpful for users that require help to maintain their attention on a single task.

**Conclusion:**

There are a lot of useful accessibility-related tools and settings that can help customize the iOS experience to each user's needs. I believe with these accessibility features from your Phone, it will help you to improve the experience. While you likely won't need all of the features above, you'll be glad that the few you may need are ready and waiting to be used.

I think Apple made a good execution with the different features that they offer in their products.