What is Assistive Technology?

Assistive Technology (AT) are “products, equipment, and systems that enhance learning, working, and daily living for persons with disabilities.”

Screen Readers
Magnification Software
Speech Recognition
Trackball Mouse
Keyboard

Zoom Text
Braille Computer Keyboard
Captions/Subtitles
Captioned Telephone
Video Relay Services
What are Screen Readers

Screen readers are a form of assistive technology (AT) software that enables access to a computer, and all the things a computer does, by attempting to identify and interpret what is being displayed on the computer screen using text-to-speech. Screen readers can only access and process live text.

- Provides access to someone who is visually impaired, mobility or has a learning disability to access text on the screen.
- Offers same level of independence and privacy as anyone else.
Types of screen readers

Screen reader program for Microsoft Windows that allows blind and visually impaired users to read the screen either with a text-to-speech output or by a refreshable Braille display. **NVDA screen reader** can be downloaded free of charge by anyone.

Provides auditory descriptions of each onscreen element using gestures, a keyboard, or a braille display.

Adds spoken, audible, and vibration feedback to your device.

Screen magnifier for Microsoft Windows that allows you to see and hear everything on the computer.
Excel Accessibility

• Title should appear in Cell A1 of the Sheet
• Content begins in cell A2
• Position data along top, left edge of sheet
• Content reads properly from top to bottom and left to right
• Content layout is logical and predictable
Tips & Features

- Sans Serif Font, minimum 12 pt
- Auto-font color (black)
- Sheet Names are **brief** and **unique**
- Delete Unused Sheets
- Always Save worksheet with cursor in cell A1 of Sheet 1
A screen reader user will usually **start with the first cell (A1)**, provide an overview or information about the worksheet.

When using Excel keep in mind that a user of assistive technology is going to be navigating by cell, therefore it's important to ensure your sheet begins using the A1 cell so that they can immediately begin accessing the content. This is a great spot to provide an overview or information about the worksheet.
Headings Structure

Use the Style pane in the home ribbon to define the cell styles and input headings.

1. Select the cell with the section title A1
2. Home | Styles pane | click on Cell Styles
3. Select the appropriate heading level
Sheet Names – Right click, Rename or Delete
One Item per Sheet

• Place each item (dataset, table, graphic) on its own sheet

• Divide complex (datasets, tables) into smaller, more manageable units on separate sheets

• Avoid nested datasets and tables
# Winter 2018 Student Roster

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharpen</td>
<td>Kate</td>
<td>Senior</td>
</tr>
<tr>
<td>Monroy</td>
<td>Crystal</td>
<td>Junior</td>
</tr>
<tr>
<td>Rultz</td>
<td>Shirley</td>
<td>Sophomore</td>
</tr>
<tr>
<td>Devoudian</td>
<td>Allen</td>
<td>Sophomore</td>
</tr>
<tr>
<td>Nguyen</td>
<td>Vin</td>
<td>Freshman</td>
</tr>
</tbody>
</table>
Row and Column Headers

• Designate Headers for Datasets and Tables
• Avoid merged cells for headers
• Use Define Name for Rows and Columns

• Datasets:
  • If column and row headers are present, Name = Title
  • If only row headers are present, Name = RowTitle
  • If only column headers are present, Name = ColumnTitle

• Tables:
  • Select option: My table has Header rows
Dataset: Header Row – Define Name

Right click to select Define Name
Dataset: Enter Name and Scope
(leave Comment blank)
About Dataset: Enter Name and Scope

Dataset option

If the table has column and row headers, enter **Title**

If the table has row headers only, enter **RowTitle**

If the table has column headers only, enter **ColumnTitle**
Dataset containing formula(s):
Select Dataset, Insert, Table – Create Table
Table Headers

- Screen readers keep track of their location in a table by counting table cells.
- Screen readers also use header information to identify rows and columns.
- If a table is nested within another table or if a cell is merged or split, the screen reader loses count and can’t provide helpful information about the table after that point.

- When using tables, remember to keep their layout simple, don't merge cells or nest tables inside other tables.
- Be careful with empty rows and columns (blank cells). While they may sometimes be necessary to visually separate data, they can cause a screen reader user to think the sheet has ended, even when it has not.
Format Cell Data

• Format cells so all text is visible (i.e. no hastags ###)
• Avoid merged or split cells
• Avoid text boxes
• Avoid blank rows and columns
• Avoid blank cells
  • Use other means (i.e. n/a, minus sign, 0, no data, empty cell, etc.)
Avoid Blank Cells – use other means (ex: n/a)

<table>
<thead>
<tr>
<th></th>
<th>HW 1</th>
<th>HW 2</th>
<th>HW 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharron</td>
<td>90</td>
<td>100</td>
<td>95</td>
</tr>
<tr>
<td>Monroy</td>
<td>95</td>
<td>85</td>
<td>100</td>
</tr>
<tr>
<td>Ruiz</td>
<td>95</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>Davoudian</td>
<td>n/a</td>
<td>99.9</td>
<td>99.9</td>
</tr>
<tr>
<td>Nguyen</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>
Tables Accessibility

• To ensure accessibility, format tables with headers and **avoid** merged, split, or blank cells.

• The complex a table (merging cells, nesting multiple headings under one, adding blank lines, etc.) the worse it will be for accessibility.

• Sample of [Simple Tables vs. Complex Tables](#) by Penn State.
Visual Challenge

What’s the best way to make images accessible to everyone?
Alternative or Alt Text

• The purpose of alt text is to allow low vision or blind users to understand the purpose of the image. Describe only how image relates to content. What is its purpose?

• Screen readers and other assistive technologies can’t convert images into words/texts.

• Captions are universal and accessible for everyone.

• “Image of...”, “photo of...” is not needed.

• Recommend brief descriptive text within 8 to 80 characters long.

• Best practices for accessible images

When screen readers encounter an image, they read out the word “image” or “graphic” and then read the alt text

Tiny turtle eating a ripe strawberry.
How to Describe Images?

A stair chase leading up to an entryway is painted yellow with bold black text that reads museums are now.

A hand reaches out of a computer screen giving the hand gesture for stop. The screen reads ‘access denied!’

On the left is the book cover for Haben The Deafblind Woman Who Conquered Harvard Law, and on the right is the quote: “In the Tigrinya language of Eritrea and Ethiopia, Haben means ‘pride.’”

Michelle Obama claps and Barack waves.

Student holds a diploma hardcover up in the air during CSUN commencement. Caption text “and together, as Matadors, we will move mountains.”

More examples of How to Describe Images

- Document Learning Tools: Describing images
- How to Describe Images (Art, Chemistry, Diagrams, Flow Charts, Formatting & Layout, Graphs, Maps, Mathematics, Page Layout, Tables, Text-only images)
- Periodic Table of the Elements
- UDC Best Practices for Describing Images
Add Alt Text to images

Add alt text to images, Smart Art graphics, shapes, charts so that screen readers can read the text to describe the image to users who can’t see the image.

- Right-click an image
- Select Size & Properties
- Select Alt Text
- Enter a description
Format Menu – Format Pane
Format Pane—Size & Properties
Alt Text (Description)
Not Accessible – Line Chart contains color-coding

Color View

Black & White View
Format Pane – Fill & Line
Format Data Series – Fill & Line, Color and Dash Type
(repeat for each line)
Inaccessible Line Chart

This is an inaccessible line chart based on the data in the table comparing percentage of Mac and Windows users in 1990 and 2003. In grayscale, these colors are virtually identical may not be recognized by colorblind users.

Accessible Line Chart

This chart replaces three solid lines with one solid line and two dotted lines, with labels for each. For line charts, changing the style of the graph lines and adding labels increases usability. [Charts & Accessibility by Penn State](http://csun.edu/udc).
Not Accessible – Color Coding
Pattern Fill – Format Data Series, Fill & Line
(repeat for each bar)
Provide descriptions if using color to convey meaning

**Example 1**: Inaccessible color highlights in red
May 11-17, 2019

**Example 1**: Accessible with a description
May 11-17, 2019* (final exams)

**Example 2**: Inaccessible table

<table>
<thead>
<tr>
<th>Assignments (overdue in red)</th>
<th>Overdue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Yes</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>No</td>
</tr>
</tbody>
</table>

**Example 2**: Accessible table

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Overdue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Yes</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>No</td>
</tr>
</tbody>
</table>

**Example 3**: Inaccessible color shape

Color identical may not be recognized by colorblind users

**Example 3**: Accessible color and number
People who have low vision or colorblind could encounter some difficulty distinguishing text color from a background color if the contrast is insufficient contrast ratio 1.5:1.

This example has a great color contrast ratio of 8.7:1. The contrast is sufficient for those who have color deficiencies.

- Download Colour Contrast Analyser onto your computer (PC/Mac) to ensure accessible contrast or use an online contrast checker from WebAIM.
- WCAG Level AA requires a contrast ratio of at least 4.5:1 for regular sized text (12 or 14 pt. font) and 3:1 for large text (18 pt. font).
- Coblis Color Blindness Simulator
View Sheet in Black & White
Descriptive Hyperlinks, 1 of 3

Not Accessible – vague and redundant

CSUN News

Woman of the Year for the 18th Senate District

California State University, Northridge President Dianne F. Harrison has been named Woman of the Year for the state’s 18th Senate District by Sen. Robert Hertzberg. Read more.

Important Dates for CSUN Commencement 2019

For graduating seniors, CSUN GradFest 2019 will take place from 9 a.m. to 6 p.m., March 13 and 14, at the CSUN Campus Store Complex. The event gives students the opportunity to make their final preparations for graduation, including renting caps and gowns, information on ceremony schedules, reserving guest tickets, purchasing souvenirs and taking graduation portraits.

Read more.

Blink the Friendly Hen: 40th Anniversary Exhibition

Comprised of a Relic Chamber, a Blinky Theatre, Blinky book editions (1979-2019), chapel, gift shop, stained glass, and historical artifacts, this fourth retrospective exhibition celebrates historical and contemporary works relating to four decades of the Blinky phenomenon.

Read more.

Accessible – descriptive and unique

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Full URL text https://www.csun.edu/universal-design-center
(raw URL may not make sense to screen reader users or others, so make the link text descriptive i.e. Universal Design Center)
When creating hyperlinks, make sure the text associated with the link is understandable out of context.

• Avoid this: You may find this tutorial here.

• Do this: You may find this tutorial on creating accessible Word document on our website.

For Printing

• If the document is likely to be printed, include the full URL. If the URL is long, consider creating a shorten URL (tiny.cc or bitly.com or other URL services)

You may find this tutorial on creating accessible Word document on our website (www.csun.edu/udc/word)

• Do not use click here or here or read more or continue or email me.

• Do not use different link text to refer to the same resource.

• Do not use the same link text to refer to different resources.

• Be unique for unique destinations.

• Best practice is to bold or underline links.

• Do not use color links as the only method to convey important information.

• Tab order should read from the upper left to the lower right, and make sense to both sighted and visually impaired users.
Descriptive Hyperlinks, 3 of 3
File - Properties - Title
Microsoft Office Accessibility Checker

![Excel spreadsheet with accessibility checkmark]

Universal Design Center

csun.edu/udc
Check for Issues, Check Accessibility
Always use Excel’s built-in Accessibility Checker
Repair Errors, Warnings and Tips
How can we help you make a difference?

- Online, self-paced training
- In-person training each semester
- Consultations
- Tools and Services

Universal Design Center Offers

*Universal Design means design for everyone*