

Toolkit: Accessible Activity Instructions for Those with Cognitive Disabilities
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Glossary of terms-

ADA: The Americans with Disabilities Act (ADA)

ADHD: Attention-deficit/hyperactivity disorder (ADHD) is marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development.

ASD: Autism spectrum disorder (ASD) is a developmental disability caused by differences in the brain.

Adaptation: the process of changing to suit different conditions.

Accommodation: a particular arrangement that is made for a person or group that has different needs from others.

Accessibility: making information, activities, and environments sensible, meaningful, and usable for as many people as possible.

Cognitive Disability: a term that refers to a broad range of conditions that include intellectual disability, autism spectrum disorders, severe, persistent mental disorders, brain injury, stroke, Alzheimer's disease, and other dementias.

Dyslexia: a condition of neurodevelopmental origin that mainly affects the ease with which a person reads, writes, and spells, typically recognized as a specific learning disorder in children.

Intellectual Disability: a disability that affects the acquisition of knowledge and skills, particularly any of various neurodevelopmental conditions affecting intellectual processes, educational attainment, and the acquisition of skills needed for independent living and social functioning.

Mental Disorder: is characterized by a clinically significant disturbance in an individual's cognition, emotional regulation, or behavior.

Microsoft PowerPoint: is a slide show presentation program designed by Microsoft.

Microsoft Word: is a widely used commercial word processor designed by Microsoft.

Neurodivergent: differing in mental or neurological function from what is considered typical or normal (frequently used with reference to autistic spectrum disorders); not neurotypical.

Neurotypical: not displaying or characterized by autistic or other neurologically atypical patterns of thought or behavior.

Sans Serif Font: a font without a decorative line. ex: Arial or Helvetica

Serif Font: a font with a decorative line. ex: Times New Roman

Toolkit: is a collection of authoritative and adaptable resources for front-line staff that enables them to learn about an issue and identify approaches for addressing them.

YouTube: is a popular video sharing website where registered users can upload and share videos with anyone able to access the site.

Preamble

My name is Leah Zeppelin Miller (she/they). I am a cis-gendered, physically disabled, neurodivergent, white woman. I was born and raised in Texas, spending most of my life there.

I have a bachelor's degree in interdisciplinary arts and sciences from the University of Washington, Tacoma. I am currently a graduate student at the University of Washington, Seattle, earning a master's degree in Museology with a specialization in museum evaluation.

While thinking through my thesis project, I reached out to my friends and peers who identify as neurodivergent and asked them what accommodations and/or changes would make educational programming in museums more accessible. The answer I received most often was, "anything." This answer is what inspired me to focus on one museum program, and to start from the beginning with the instructions.

The creation of this toolkit came from my own experiences as a disabled person, from my experiences of working with those with cognitive disabilities, and from seeing there is a lack of accommodations provided in the world of museum education programming.

Introduction

Public entities such as schools, community centers, or any other government agencies are required to make all services, programs, and activities accessible to individuals with disabilities (Americans with Disabilities Act title 28). The Americans with Disabilities Act (ADA) *Maintaining Accessibility in Museums* guide states when talking about museum programs, “Alternate formats for printed brochures and program materials (e.g., Braille, CD-ROM, large print) must be kept current, in stock, and easy to find by the public. Generally, they should be available to visitors on the same day that the standard print versions are available, including materials associated with traveling and other temporary exhibitions.”

It is estimated, in the United States of America, that 4.4% (or close to 2 million) of people between the ages of 5-15 have a cognitive disability such as Downs Syndrome, Autism, or persistent mental disorders. In addition, 10.9% of U.S. adults over the age of 18 have a cognitive disability with serious difficulty concentrating, remembering, or making decisions (Center for Disease Control and Prevention, 2022).

Making museum program and activities more accessible is helpful not only for those who need accommodations, but for everyone. There are three problems museum educators face when they start to make the move to have more accessible programming:

1. Many educators believe that to make a program more accessible, they must start over from scratch instead of making little changes throughout the program;
2. Many educators are overwhelmed by the notion of revising their programs to be more accessible, and they don't know where to start; and
3. Some educators perceive that they need specialized tools, like computer software, or additional funding to purchase tools to adapt the programming.

Cognitive disabilities impact individual functional capabilities, motivations, emotions, and behaviors. Each variety of cognitive disabilities needs individualized accommodations, but the first steps to making education programming overall more accessible to an audience with cognitive disabilities can be as simple as adapting the instructions and the methods used for giving instructions.

This toolkit is designed in 5 chapters to help museum educators start adapting their programming to create and implement accessible changes of written instructions in education programming, group activities, or outreach programs and the different ways to present them.

The Education Department at the LeMay-America's Car Museum, Tacoma, WA, allowed me to adapt their most popular program, *Crash-Test Cars*, to illustrate how museums can put accessibility principles and practices into action in their programs.

The *Crash-Test Cars* program is designed to give students in 3rd through 8th grade a basic understanding of vehicle safety features, and how they relate to Newton's Laws, as they plan, design, and problem-solve to successfully complete a design challenge. The program starts with a discussion about vehicle safety, and then students use a variety of materials like recycled cardboard, paper plates, and cotton balls to design and build a vehicle that will keep their passenger (an egg) safe in a crash. Students test and revise the safety of their prototype on the crash track with a plastic egg first, and then with a real egg. The program culminates in a discussion about what design factors worked and didn't work to protect the egg.

The only written instructions available for this program were designed for teachers to use if they're facilitating the program in their classroom rather than bringing their students to the museum for this program. Only verbal instructions are given to participating students.

Chapter 1: Materials

In creating this toolkit, I wanted to make sure everything was made using materials already available in LeMay-America's Car Museum education department, to illustrate how it's possible to make the program more accessible at little to no cost.



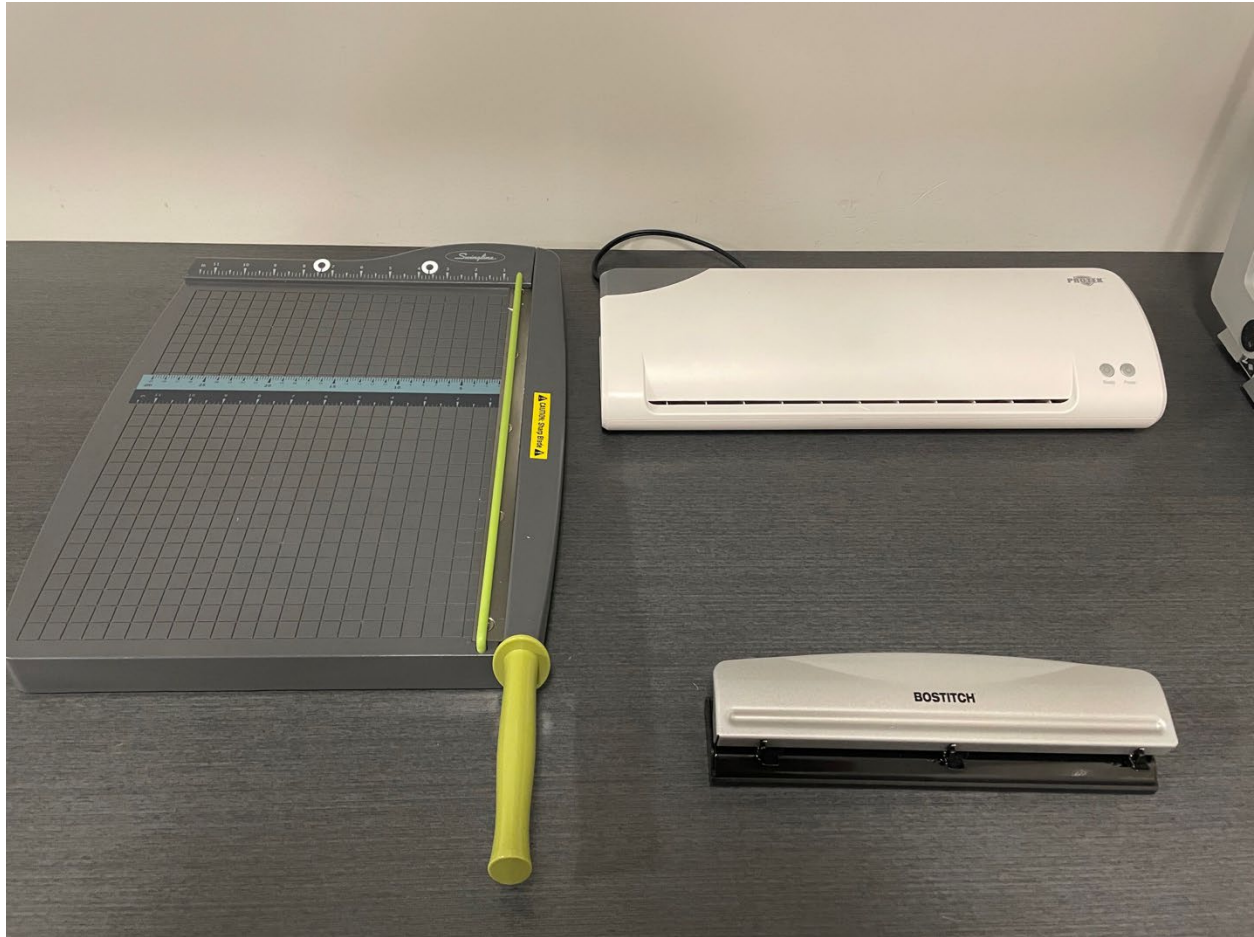
Photos used in this toolkit and the Crash Test Car instructions were taken by using a piece of cardboard as the backdrop and the camera application on an iPhone. Occasionally a makeshift tripod made with stacks of pencil cups and a storage bin with supplies in it needed to be used.

Hands-on instructions and visual aids for the Crash-Test Cars were printed using the LeMay-America's Car Museum office printer.



Any standard printer can be used.

Additionally, to create the hands-on instructions and visual aids, a paper cutter, laminator, and hole punch were used.



This resource is only a guide, you should tailor the adaptations and accommodations of the instructions of your programming to what makes the most sense for your organization.

Chapter 2: Fonts and Typeface

A simple way to make a program more accessible is to adapt the written instructions, adjusting the choice of fonts, sizing, and spacing. This will also expand access to those who use immersive readers, screen readers, and other devices to help them read text. Accessible font types have a certain level of legibility, including good height, width, and thickness. How easily available a font is also very important in terms of access. There are a wide variety of fonts that are available on Microsoft Office, Google Suites, and iWork.

Museums and other organizations have brand guides to follow with “museum approved fonts,” but fonts that are designed for branding and marketing purposes are not the same as fonts that are designed for accessibility. LeMay-America’s Car Museum’s approved font in their brand guide is Garamond regular 12-point. This is not an accessible font. Tech and accessibility researcher Waller (2021) states, “One of the most accessible and widely available fonts is Arial and others include Calibri, Century Gothic, Helvetica, Tahoma, and Verdana.”

A challenge that may come up when selecting fonts to make documents more accessible for many different disabilities is the fact that an option that could be easier for some people to understand may be more difficult for others. For example, accessibility researcher Wade (2012) states, “the simplicity of a sans serif font may improve the readability of text for a user with a visual impairment while a user with dyslexia may find the characters difficult to tell apart” (p. 27). There are some fonts that have been designed specifically for accessibility, such as OpenDyslexic that can be downloaded for free at <https://opendyslexic.org/download>

Here is a side-by-side visual comparing Times New Roman and Helvetica, and comparing Times New Roman and Verdana, to show that size and contrast are key factors that determine whether a font is accessible. To

meet the principles of inclusive design, it's important to pick a font that is simple, unembellished, and clear.

Times New Roman vs. Helvetica

<p>Hello, my name is Leah. I am a student at the University of Washington. This is a visualization of the Times New Roman font. This is a 12-point font. In terms of accessibility, this is not the best choice.</p>	<p>Hello, my name is Leah. I am a student at the University of Washington. This is a visualization of the Helvetica font. This is a 14-point font. In terms of accessibility, this is a better choice.</p>
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Times New Roman vs. Verdana

<p>Hello, my name is Leah. I am a student at the University of Washington. This is a visualization of the Times New Roman font. This is a 12-point font. In terms of accessibility, this is not the best choice.</p>	<p>Hello, my name is Leah. I am a student at the University of Washington. This is a visualization of the Verdana font. This is a 14-point font. In terms of accessibility, this is a better choice.</p>
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Chapter 3: Images

Using images in program instructions can help everyone, not just those with cognitive disabilities. The extra support for those with ASD is very important, Autism researchers Rao and Gagie (2006) claim, “Students with autism experience tremendous difficulty in processing language, but processing and understanding vision support is easier for them” (p. 26).

Creating picture flipbooks for popular programs or activities is an easy way to provide hands-on visual instructions that can be used repeatedly.

Here are two examples for the Crash-Test Cars: Suggested Materials book and Crash-Test Cars Instruction Book



[Crash-Test Cars Suggested Materials](#)

[Crash-Test Cars Instructions](#)



A bonus to laminating the instructions and hands-on visuals is that it also gives the opportunity repeatedly to write and draw on them, giving another adaptation and expanded accessibility.

Leah

CRASH-TEST CARS

Objectives:

- Design and build a car to protect an egg in a crash car
- Explore the design process as they hypothesize, experiment, and revise their designs
- Learn Newton's First Law: every object will remain at rest or in motion unless forced to change its state by the action of an external force.

Suggested Materials:

- Car Kit (Wooden chassis and two sets of wheels)
- Scissors
- Tape (Scotch or Masking)
- Glue or Glue Sticks
- Hot Glue Gun and Glue Sticks
- Crayons, Colored Pencils, or Markers
- Popsicle Sticks
- Construction Paper
- Pipe Cleaners
- Cotton Balls
- Q-Tips
- Rubberbands
- Paper Cups
- Paper Plates
- Cloth scraps
- Recycled Materials (Cardboard or Plastic Goods)
- Other Crafting Materials (Stickers, Washi Tape, or Ribbons)
- Plastic Egg
- Real Egg in a Plastic Bag



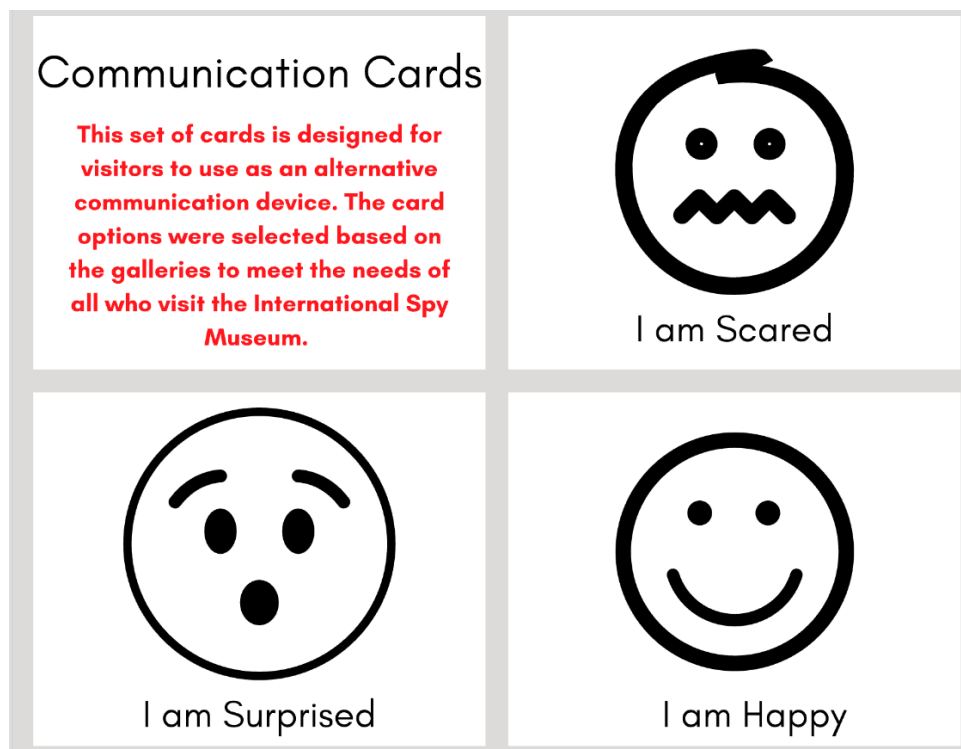
Photo Examples Used By Other Museums

Here are some examples of museums using photos in ways beyond activity instructions and how including photos in an important part of accessibility for those with cognitive disabilities.

The International Spy Museum, Washington, DC, is dedicated to opening their doors to the autistic community. On their website, you will find a page that is full of resources for those in the autistic community and those with other sensory issues to be able to fully enjoy their museum experience:

<https://www.spymuseum.org/education-programs/access-to-spy/autistic-community/>

On the website, you will also find a sensory sensitives map, social narrative for children accompanied by adults, social narrative for teens and adults, and even communication cards.



The Henry Ford Museum, Dearborn, MI, is also focused on inclusion for those in the autism community. On their website, you will find a page full of resources that include where to locate ear plugs, communication boards, and links to social narratives about visiting the museum:

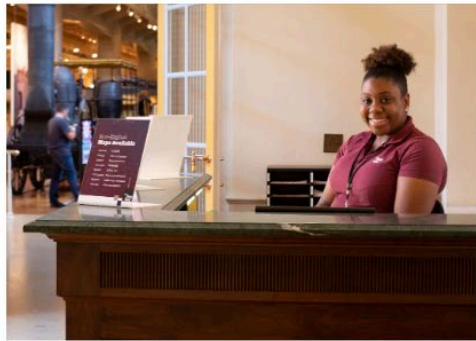
<https://www.thehenryford.org/visit/plan-your-visit/accessibility/accessibility-autism-spectrum-disorder-sensory-processing-disorder/>

Photos are used in the social narratives to allow visitors to get a better understanding about the types of environments they will encounter within the museum.

The Museum Store is at the front of the building. There are many interesting items in the store. The store also has lots of breakable items. The lights are bright and music is playing.



Before you enter the museum, you will have to show the person at the counter your ticket. Get ready! They can stamp your hand in case you want to leave and come back later.



There are bright lights here



There are loud sounds here



It might be crowded here



There is no climbing here



There is no running here

Welcome to Henry Ford Museum of American Innovation | 5

Photos show what spaces in the museum look like and if they should be aware of any environmental elements that may cause sensory issues such as bright lights or loud noises.

HEROES OF THE SKY

In Heroes of the Sky, you can see many different planes from throughout history. You can even sit inside a plane. In this exhibit, you will hear the sounds of wind and airplanes' propellers and engines.

Also in Heroes of the Sky, you will have a chance to **make a paper airplane** and see how far it will fly in the testing area. There may be lots of other people in this area, also making and testing paper airplanes.

You can watch videos about flights by Charles Lindbergh and Amelia Earhart. These videos are exciting, but there are also flashing lights and loud, excited voices telling these stories if you push the button.

You can also **stand on a "wing" and watch a movie that makes it seem like you are flying**. You will feel vibrating and hear loud propeller and engine noises, just like on a plane. If you are scared of heights or get motion sickness, you may want to avoid this movie, even though your feet never leave the ground.

A **K'Nex area** outside of the exhibit is available for children to play in. It may be crowded and noisy here with lots of children playing.



There are bright lights here



There are loud sounds here



It might be crowded here



There is no climbing here



There is no running here

Welcome to Henry Ford Museum of American Innovation | 13

They also use accessible fonts to describe what visitors will see and be able to do in different areas of the museum.

Chapter 4: Video

This chapter is designed to show you additional ways to use adapted instructions based on the type of classroom environment you are in. Classrooms in museums and other community places such as schools or libraries often have access to computers, Chromebooks, or iPads to present slides or videos.

Creating YouTube videos with the instructions can allow someone to be able to work at their own pace, go back and forth for clarification, and be accessed later at home if they want to continue working after the program is over.

[Crash Test Cars Video Instructions](#)



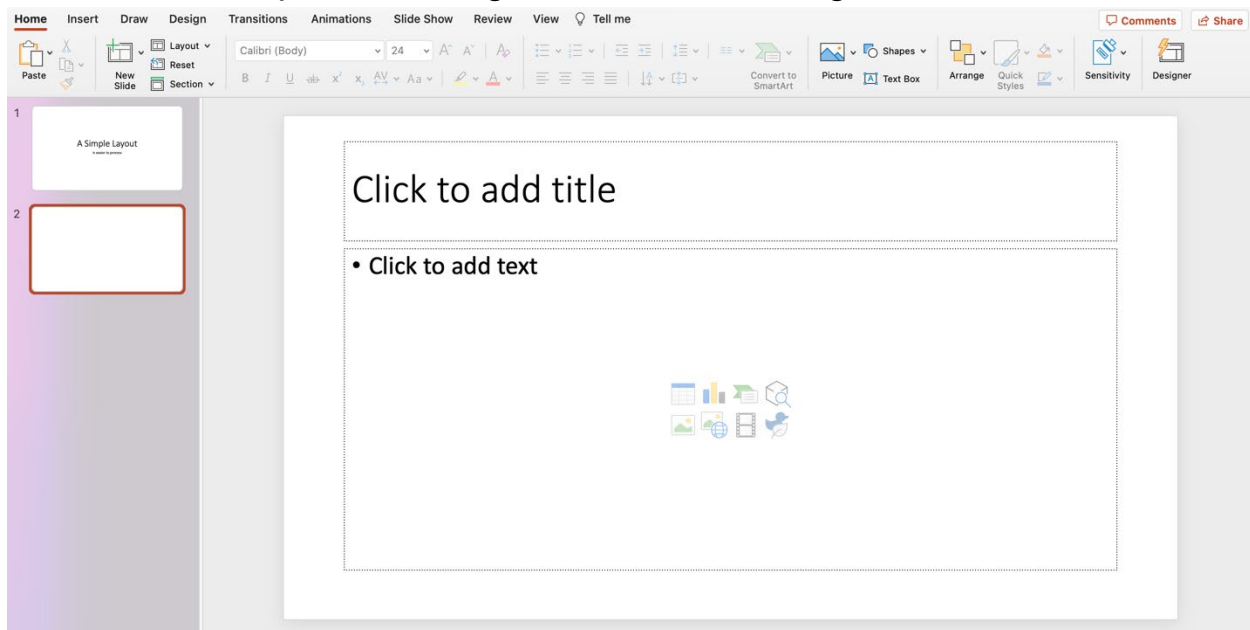
This video was created by taking all the photos already taken to create the above materials, putting them into the free program iMovie on a MacBook, and then exporting into YouTube.

Windows has similar free software called Clipchamp.

An additional source to be able to make videos is PowerPoint. PowerPoint allows you to record your slide presentations with video and audio that can then be uploaded to YouTube.

When using PowerPoint to create a video, there several tips that help you make a more accessible presentation.

- A simple layout
 - Complicated designs can be distracting.

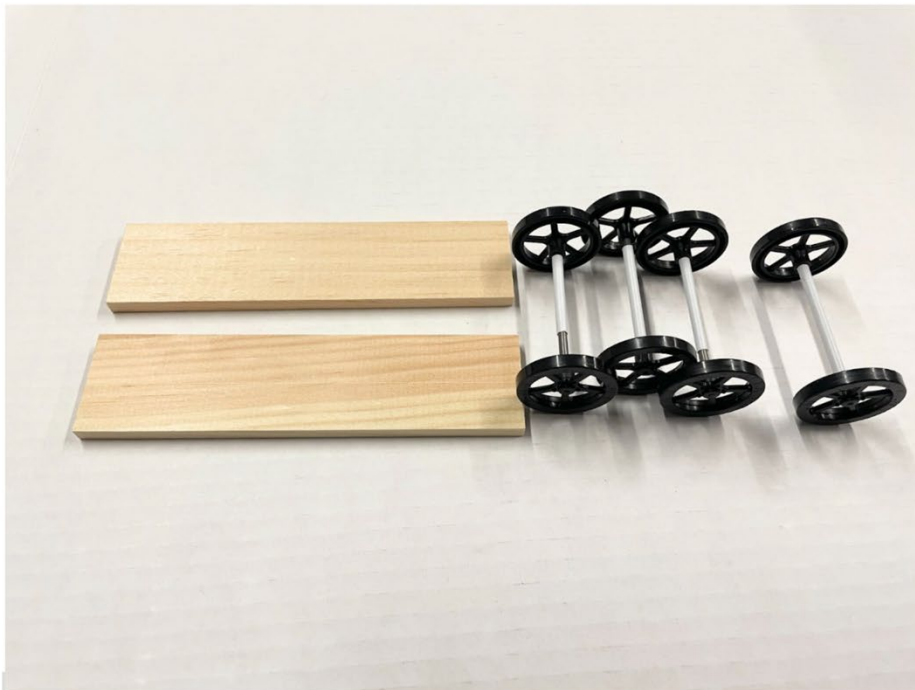


- Present content in an organized structure
 - When used for giving instructions make sure to go in step-by-step order.
- Use contrasting colors.
 - White background with black lettering or black background with white lettering.

Crash-Test Car Instructions

LeMay-America's Car Museum

- Leave plenty of white space.
 - Allows for viewer to narrow their focus.



Chassis and sets of wheels

Chapter 5: Recommendations

To get feedback on the ideas and practices in this toolkit, data were collected from museum educators of the Puget Sound region. Specifically, educators were asked, “What do you think is the best way for this toolkit to be implemented in a museum setting?”

Data suggest that the toolkit is best suited for smaller education departments or smaller museums because it can be used as a first step or attempt in accessibility beyond ADA regulations due to limited access to resources.

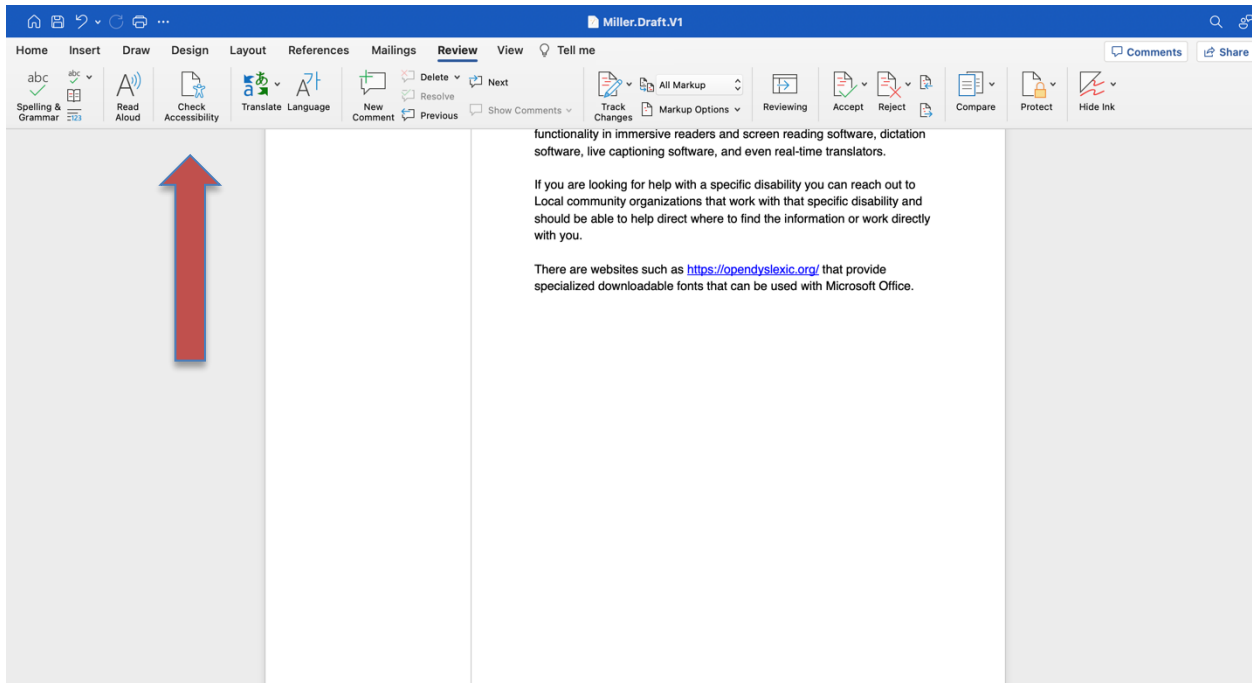
When using this toolkit, it is best to look at a single program or activity, then work through the toolkit to see what the program or activity already offers and what needs to be improved upon.

This toolkit can also be used as a means of training new employees, a helpful aide when schools are visiting, and even during all staff DEAI meetings to give viable examples of accessibility for all.

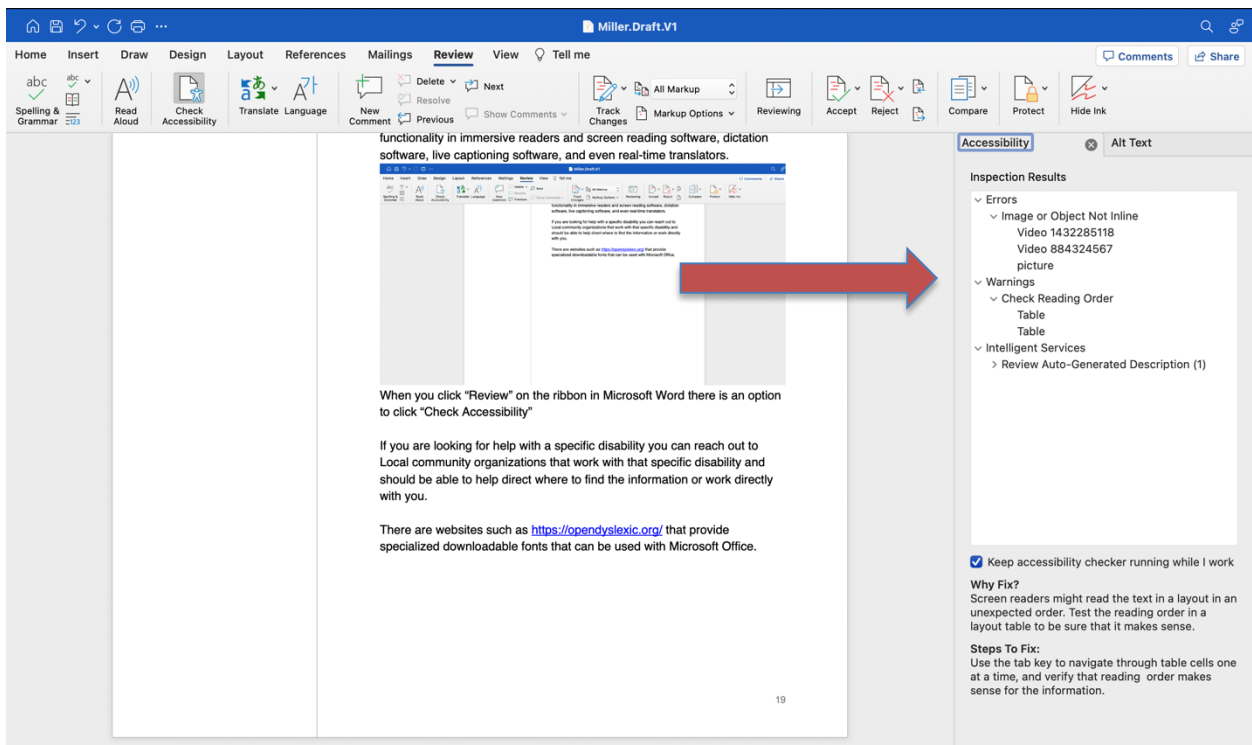
Additional Resources

If you are looking for more ways on how to make your programming more accessible beyond just the instructions, there are many more resources to be able to explore and help guide you.

For example: Microsoft has built-in accessibility checkers in Word, PowerPoint, and even for emails in Outlook. These accessibility checkers allow you to see how things would look to someone who was colorblind, functionality in immersive readers and screen reading software, dictation software, live captioning software, and even real-time translators.



When you click “Review” on the ribbon in Microsoft Word there is an option to click “Check Accessibility”



The accessibility checker will open and show you suggestions on how to make your report or presentation more accessible.

There are websites such as <https://opendyslexic.org/> that provide specialized downloadable fonts that can be used with Microsoft Office.

If you are looking for help with a specific disability you can reach out to local community organizations that work with that specific disability and they should be able to help direct where to find the information you are looking for or work directly with you.

Make sure when researching accessibility that your organization does due diligence because there are many controversial organizations that claim to support those with disabilities, especially in the Autism community, but are ableist and dangerous.

Next Steps

This toolkit is made to be a living document. That changes and additions will be continual as more information is learned and access to resources grow.

The next steps for this toolkit would be to connect with several disability organizations that focus on cognitive disabilities to provide additional information and continue adding additional resources for museum professionals wanting to make their programming more accessible so that they may be able to adapt their programming beyond just the instructions.

To do an evaluation by sending out this toolkit for more museum educators beyond just the Puget Sound region to see how they think this toolkit could be implemented in their museums and use the information gathered to be able to create an accessibility workshop that education departments will be able to participate in.

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