Success 4 @ll
INCLUSIVE E-LEARNING COURSE ON ENTREPRNEURSHIP

GUIDE OF BEST PRACTICE FOR ACCESSIBLE WEBSITES

(ACCESS4ALL GUIDE)

INTELLECTUAL OUTPUT IO1

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OVERVIEW

Modern information technology offers many ways to enhance the educational experience for students at all levels of learning. From showing predeveloped presentations during traditional lecture delivery to delivering complex audio-visual content in a purely online educational program, the use of information technology in the educational process can facilitate results that are significantly improved over traditional instruction methods that do not leverage technology.

E-Learning shows extreme promise in the enhancement of the educational process, but in order to maximize the benefit for all students, it is important to design resources with disability management in mind.

The strategy that we suggest for developing accessible digital learning resources follows the following general outline:

- Understand the access needs of the students.
- Follow practices to avoid barriers to access.
- Add features to facilitate the use of enabling technologies.
- Select appropriate content for.

In this book, we present practices and techniques that align with this strategy. Graphical summaries of these techniques are included as an appendix. They are designed to be printed as a poster or quick reference guide to be used in environments where developing accessible e-learning material takes place.

PRACTICES

UNDERSTAND THE NEEDS OF YOUR AUDIENCE

Summary: before you begin the development of a website, make sure that you understand the actual needs of your audience.

Objectives:

- Understand which best practices apply to the site.
- Select an appropriate structure for the site.
- Establish critical success criteria for site.

It is almost to design a useful website that has the generic capabilities to provide maximal access to users with all different types of disabilities. Sensory disabilities and cognitive disabilities present very different obstacles and also very different facilities to assist users with the accessibility of the online media. Because there is a wide variation of specialized user need, there is also a wide variety of tools to assist in meeting those needs, such as those proposed by the World Wide Web Consortium[1].

The first step, therefore, in providing a maximally accessible website is to gain the best possible understanding of the specialized needs that your specific users will have, when accessing your site. A best practice is to spend some time with your likely users before you build the site, so that you can see how they experience websites and then design your offering around their experience process.

WEBSITE ACCESSIBILITY GUIDE

Summary: create a guide for content and site developers, so that they can properly meet the needs of the users.

Objectives:

- Base accessibility guide on requirements tailored to the requirements of your specific users.
- Leverage existing guides such as the WCAG project[2].
- Leverage other resources such as the DASH project[3].
- Create a resource that ensures optimal development.

Once the needs of the specific audience are identified, an industry best practice is to document this understanding in a reference guide that can be used during the site-design, web-programming and content development processes.

USE ACCESSIBLE DESIGN COMPONENTS

Summary: use iconography and other components of design philosophy such as "UniDesign" to facilitate access for disabled users from the first design stages of the website.

Objectives:

- Ensure design philosophy meets the users actual needs.
- Leverage standardization of accessible web interfaces.

During the design stage of the website, begin by thinking about how the overall design will can facilitate site accessibility for disabled users. In the physical world, modern design practice now includes the recommended use of standard symbols that assist people with disabilities in interacting better with the design. Symbols such as the ear with a line through it, standard audio cues for traffic control, optical enunciators, and even wasabi-puffing fire alarms all use standard symbols to (tactile, auditory, visual, or olfactory) to communicate in standard ways to people with sensational disabilities. Likewise, standardized design and techniques are being developed to communicate in a standardized way in online media situations.

Researchers Elizabeth DePoy and Stephen Gilson have begun working on techniques to unify design elements for website creation (4). After considering the aforementioned symbols (among others) and their use in public space design, they have created a language of new symbols that give generalized directions for some disabilities in an online communication medium. They describe their framework as an accessibility paradigm that can be used to make real change to the accessibility of online platforms, and they call their system "UniDesign". Their system utilizes symbols are focused general directions rather than specific disabilities, but the end result is a generalized design methodology that helps disabled users with access to the online media.

USE HIERARCHICAL SITE STRUCTURE

Summary: create a site with a logical, hierarchical page structure to facilitate alternative browsing methods.

Objectives:

- Facilitate ease of site navigation.
- Allow content to be consumed in manageable chunks.
- Utilize a standard navigation pane, if appropriate.

During the design stage of the website, begin by thinking about how the overall structural design will facilitate site accessibility for disabled users. Utilizing a hierarchical design structure will further facilitate learning strategies for users with specific attention or learning related disabilities. Hierarchical design makes site navigation more clear and repeatable, and thus facilitates navigation with alternative browsing capabilities, such as those described by Trenton Moss[5].

USE ALT TAGS

Summary: the ALT, TITLE and LONGDESC tags built into the Hyper Text Markup Language (HTML).

Objectives:

- Allows accessibility-based web browsing tools to help the user with website navigation.
- Facilitate graphical interface interaction for the visually disabled.
- Enable alternate browsing technologies.

When a user hovers their mouse over an image, the helping text that pops up under the pointer is called alt text, and it is created with an ALT tag. The ALT tag holds a textual description of an image on that is referenced, and it is included in the HTML code of the Web page. It is a best practice to use alt text for all graphical components of a webpage, including images, icons, bullet, and line rules. Within the ALT tag, the alt text should describe the purpose and content of the image to the user, so that it could be possible to understand the webpage's graphical content, even if the graphical webpage could not be seen.

In HTML, the IMG tag contains the ALT tag inside of it. Other tags that may be included within the IMG tag are the TITLE tag and LONGDESC tag. Some browsing assistance technologies recognize these tags, as well (because of restrictions with JAWS, ALT tags should be limited to roughly 150 characters, as a best-practice).

An example of the usage of alt text, for a photograph of a person, would be to use alt text to list the person's name. For pictures of other graphic content, a few descriptive words should suffice, i.e. "cup of coffee" or "three horses running in a field".

Visually disabled users can access websites using technology such as screen readers, and these readers access the alt text and other tags to describe the screen audibly to the user, providing a descriptive equivalent of the screen graphics. Other tools, such as visual browsers, display alt text when the link to an image is broken, or when access to images has been disabled in some other manner. The use of ALT tags also facilitates the use of very low-bandwidth communication channels, when images will take a more disruptive amount of time or data to be downloaded. For a user with a visual impairment and the use of a screen reader that reads the alt tags aloud may be the only way that the user can access the information on the webpage[6].

Serious use of the alt tag and (the other tags TITLE and LONGDESC) provide an opportunity to describe webpage for use without graphics.

SUBTITLES AND TRANSCRIPTS

Summary: use subtitles for video files and transcripts for audio files.

Objectives:

- Allow all multimedia content to be used by all users.
- Enable alternative browsing technologies.
- Facilitate content searching and portability.

Educational material is perceived and understood through different sensory channels, and thus educators frequently make use of multiple forms of media to communicate with students. For some desired learning outcomes, auditory or moving video content may be the best way to communicate with the student, but this multi-media approach can cause problems for students with disabilities. If a student has either a difficulty or a complete inability to perceive information meant to be experienced through a multimedia communications channel, it is possible to mitigate the effect through the inclusion of supplemental textual information.

All modern data formats for video transmission include the ability to include subtitles or associated subtitle files. Use of subtitles allows access for those with hearing disabilities and some forms of visual difficulties. For those with hearing difficulties, the textual representation of dialogue and audio cues will assist the student in understanding and interpreting the content. During the creation of subtitle content, it is important to include important audio ques, transcription of all dialogue, and even descriptions of important of visual content that is important, undescribed, or difficult-to-see.

Audio content may also be augmented by transcription technology. Not only does the creation of accompanying transcript files facilitate communication with the hearing impaired, it offers a resource for users that suffer from comprehension disabilities or conditions which require modulation of the flow of information. In the case of scripted content, providing a transcript may be as simple as cutting and pasting the script into the appropriate format.

Provision of supplementary text for all multi-media content is a general best-practice that facilitates maximum information usefulness and understanding for all users, regardless of disability status. An alternative strategy would be to provide a complete alternative (but equivalent) set of course material for all multimedia content.

PERIODS IN ABBREVIATIONS

Summary: user periods whenever typing abbreviations and initialisms such as E.C.B., M.B.A. or N.A.T.O..

Objectives:

- Enable the use of screen reader technology.
- Ensure clarity of abbreviations and initialisms.

Since knowledge of the terminology, abbreviations, acronyms, and initialisms of the subject is critical to effective academic communication, a significant part of that education is learning to "speak the language" of the field. For this reason, the text of many e-learning resources is littered with collections of capital letters that are pronounced together such as ECB (the acronym for the European Central Bank), CIA (the acronym for the Central Intelligence Agency), NATO (the initialism for the North Atlantic Treaty Organization) or RoHS (the acronym and initialism for the European Commission's directive on Removal of Hazardous Materials).

Screen reader technology is not yet very good at determining when to discern between an initialism and an acronym, so the best practice is to place periods between the letters. If attention is not paid to the periods in acronyms, then ECB would be pronounced "eck-buh" instead of "ee-sea-BEE" and the CIA would be pronounced "cha" instead of "SEE – eye – aye". Further difficulties come in initialisms like NATO and RoHS. Typically, NATO is pronounced "NAY-toe", so it may be read correctly by a screen reader, but using N.A.T.O. would clearly communicate that the letters are the initial letters of underlying acronym.

More difficulty arises with words that are acronyms and initialisms, but the intialisms utilize non-standard pronunciations. A great example of this is RoHS; without including periods RoHS a screen reader may pronounce this as "RAHSS", even though the accepted pronunciation is "ROE-hass", which would me much more clearly understood by a student using a screen reader as R.o.H.S. and pronounced "ARE – oh – Aych – ess".

It is important to note that the English Style Guide of the European Commission required that all initialisms and acronyms be written without periods[7], so text taken from official government documents should definitely be scrutinized for the use of periods in abbreviations [1].

DESCRIBE ALL LINKS IN TEXT

Summary: describe links in the text for clarity and usability.

Objectives:

- Facilitate easier site navigation
- Enable alternative browsing technologies.

The modern history of online interface design has seen a strong shift in priorities, from an initial focus on clarity and usability to a stronger focus on aesthetics and graphically-centered interaction. A side effect of this transition is that links are sometimes hard to find, and those links tend to point in directions that are not easily understood from the textual content of the websites. Icons and clickable areas are discussed elsewhere in this document, but in the case of standard text links, it is still not always clear where a link points to.

While it is a best practice in web design as a whole, the textual descriptions of hyperlinks is critical to many disabled users, as well. Underlining links is also critical in order to find the links on the page, and enable extra capabilities of screen readers, and the underlines make the links easier to find and understand. For people with contrast or color differentiation difficulties, the underlines and textual descriptions make it easier to determine the location and content of links.

AVOID SHORTLINKS

Summary: abbreviated/shortened links obscure site structure and cause clarity and usability issues for alternate browser technology.

Objectives:

- Avoid using links like youtu.be/abcdefg
- Avoid using links like goog.le/asdfj?a.

The modern history of online interface design has seen a strong shift in priorities, from an initial focus on clarity and usability to a stronger focus on aesthetics and graphically-centered interaction. A side effect of this transition is that links are sometimes hard to find, and those links tend to point in directions that are not easily understood from the textual content of the websites. Icons and clickable areas are discussed elsewhere in this document, but in the case of standard text links, it is still not always clear where a link points to. Some users (such as those using braille displays) may prefer shortened links, though, so as with all of the best practices in this manual, it is important to consider the actual requirements of your end users.

ENABLE KEYBOARD INPUT

Summary: make sure that the use of a mouse is not a requirement for use of your site, if it is not required.

Objectives:

- Allow tab-order navigation.
- Allow navigation with arrow-key movement.
- Retain text anchors for all clickable links.

Modern websites focus on "point-and-click" paradigm for user-interaction. Although this input method has been the primary focus of user input since the inception of the first web browser, it is important to understand that web sites that only function for users with point-and-click devices limit the accessibility of the information on the site. Many users are unable to use a mouse, for various reasons, as both age and disability can contribute to limits on fine motor control[8]. For people with visual impairments, input devices that involve pointing (such as mice, touchscreens, and digitizers) rarely make sense.

A website designed with accessibility in mind will not rely solely on point-and-click input. A useful approach is to design the website so that it can be driven by keyboard input alone. When websites are designed appropriately, a number of access techniques avail themselves, including keyboard input, screen reader based navigation, and speech control. Any assistive technologies that mimics the keyboard can be utilized.

USE LARGE CLICKING TARGETS

Summary: summary practice #6.

Objectives:

- Objectives of practice #6.

For those features that use point-and-click features, special consideration should be given to the size of the "clickable target area". Users with both fine motor mobility problems and visual disabilities, the selection of small regions of the screen space may be difficult to manage. Even for fully abled users, the requiring a small target region for a link is considered poor design and reduces overall website usability. Furthermore, users with nervous disorders and palsy disorders may have intermittent issues with selecting small targets. Both size of the clickable area and separation from one clickable target to another should be considered.

An excellent guide for using alternate browsing technologies has been written by Trenton Moss[5]. Although the guide was written in 2004, it is still very relevant, and it provides an excellent resource for all areas of web-accessible development

DESCRIBE ALL LINKS IN TEXT

Summary: use intelligent color choices.

Objectives:

- Objectives of practice #5.

Color is a critical element of modern design philosophies, and the trend of choosing aesthetically pleasing design features over functionally effective design features means that the color choice for digital learning resources can sometimes cause problems for accessibility. A number of factors outside of aesthetics should be considered when choosing the color palette for an accessible website. Visual impairment, concentration issues, and psychological sensitivities can all be influenced by the color palette employed during web site design. Even neuro-physiological disorders can be aggravated with improper use of colors (specifically flashing colors).

Red-green colorblindness is the most common colorblindness in the world[9]. Contrary to popular belief, it does not mean that a person cannot see the colors red or green, but rather they have a more difficult time discerning the difference between shades of these colors; when shades of red and green are approximately the same level of darkness, however, there is extreme difficulty telling the difference between the colors. There is ongoing research that is showing that red-green color-blindness may cause some other shades of yellow, brown, and orange to be confused with greens or reds, but this is still an area of study[10]. When designing a color palette for your website, it is important to avoid combinations of hue and color strength that are difficult to discern with red-green colorblindness. It is also important to consider display contrast, as some visual disabilities are not related to color, but rather to contrast discernment.

INTELLIGENT CONTENT SUBDIVISION

Summary: use an appropriate level of detail in the text "copy".

Objectives:

- Facilitate alternative learning needs.
- Prevent attention disabilities from limiting access.

Some users have different abilities to focus and interpret information. Some psychological disorders, disorders, concentration disabilities, and special needs for learning will require a different level of depth to be used in the consumption of web-based educational content. For users with special needs, techniques such as modulating the text, using appropriate non-textual anchors (imagery), and using an appropriate information tempo may product optimized results in the learning process. A best practice in the development of web-based learning content is to pay attention to active voice, size of the lesson, organization, clarity, and details like sentence structure, vocabulary, and tempo of text will assist in achieving the best possible learning outcomes.

Content that is improperly focused can cause problems for users that have limited attention abilities; as Sandi Wassmer points out in her "What's up with web accessibility" blog, it is not necessary to produce hyper-abbreviated or overly boring web content, but the level of depth needs to be tuned for your specific user[11].

TIPS FOR ACCESSIBLE WEB DEVELOPMENT "SUCCESS4ALL" PROGRAM

E-COURSE ON ENTREPRENEURSHIP SKILL - AN INCLUSIVE EDUCATION APPROACH.

BEST PRACTICES TO USE

Understand the needs of your audience

Before you begin the development of a website, make sure that you understand the actual needs of your audience. Use interviews, surveys and expert help to determine what the needs really are.

Website accessibility guide

Create a guide for content and site developers, so they can properly meet the needs of the users. Base accessibility guide on requirements tailored to the requirements of your specific users. Leverage existing guides such as the WCAG or the DASH projects.

Subtitles and transcripts

Use subtitles for video files and transcripts for audio files. This allows all multimedia content to be used by all users, enables alternative browsing technologies, and facilitates content searching and portability.

Hierarchical site structure

Create a site with a logical, hierarchical page structure to facilitate alternative browsing methods. This facilitates easy navigation and allows content to be consumed in manageable chunks. Utilize a standard navigation pane, if appropriate.

Use accessible design components

Use iconography and other components of design philosophy such as "UniDesign" to facilitate access for disabled users from the first design stages of the website.

Describe all links in text

Describe links in the text for clarity and usability. This facilitates easier site navigation and enables use of alternative browser technologies. Underline all clickable links so mouse-overs aren't needed.

Use "alt tags" for images

Make full use of the ALT, TITLE and LONGDESC tags built into the Hyper Text Markup Language (HTML). This allows accessibility-based web browsing tools to help the user with website navigation.

PRACTICES TO AVOID

Don't use problematic color palettes

Avoid using color palettes with low contrast or highlighting schemes that oppose reds to greens. Be aware of flashing colors (such as "Nintendo gold") that can cause seizure-related difficulties.

Don't forget to subdivide your content

Use an appropriate level of detail in the text "copy". Intelligent content subdivision is critical for people with learning or attention deficit disorders and it makes your site more readable for everyone.

Don't require a mouse to navigate

Enable keyboard input by allowing tab-order navigation, by offering navigation with arrow-key movements, and by retaining text anchors for all clickable links.

Don't forget periods in abbreviations

Avoid typing abbreviations and initialisms such as E.C.B., M.B.A., or N.A.T.O without the periods if you wish the letters to be pronounced individually. Without periods, abbreviations may be pronounced by screen readers (e.g. C.I.A. is read as "Cha").

Don't use small clickable targets

Make sure that the use of fine motor movements for mouse navigation. A good design rule is to design the website so that it would function well with large fingers on a touchscreen.

Don't use link shortening

Avoid shortened or abbreviated links because they obscure site structure and cause clarity and usability issues for alternate browser technology.

Don't panic!

Designing web content is mostly common sense. Place yourself in the shoes of your user, and you will find it easy to build a website that meets all of your users accessibility needs.

PARTNERS

The Success4all project is driven by the work of 8 partners from 3 different EU Member States (France, Latvia, Bulgaria) having complementary profiles in order to provide the necessary expertise for the implementation of all project activities.

PSB Paris School of Business

Founded in 1974, PSB Paris School of Business is a European elite Grande École management school that combines academic excellence, international awareness and professional experiences. A member of the Conference of Grande Écoles, EFMD and AACSB, the institution offers several programs: Undergraduate (International BBA), Graduate (Grande École program), and post-Graduate (MSc, MBA, DBA).

Europroject Ltd. (EP)

Europroject is a French-Bulgarian consultancy specialized in the setting up and management of innovative, collaborative and large scale RTD projects for SMEs, universities and research centers in all EU member states. The company is also experienced in the development of trainings, IT support, methodologies, studies, tools and evaluations.

South-West University Neofit Rilski (SWU)

SWU «Neofit Rilski», located in the city of Blagoevgrad, Bulgaria, offers programmes in 67 Bachelors, 86 Masters and 43 Doctoral programmes. An e-learning laboratory has been established in 2006 to provide blended learning course. Additionally, a dedicated center for students with special needs provided specialised support for both students and HE staff.

Invalidu un vinu draugu apvieniba - Organisation of People with Disabilities and their friends APEIRONS (APEIRONS)

Apeiron is a NGO which aims to fully integrate people with disabilities in the society. Established in 1997 the organisation is currently the umbrella organisation for disabled people's organisations in Latvia and is working within the fields of human rights, accessibility, employment, inclusion and integration in teaching and social services for children.

Center for Independent Living Association (CIL)

CIL is a Bulgarian non-governmental, non-profit association of disabled people. It has been working for a change in the governmental policy in the area of disabilities since 1995 by actively promoting the values of Independent Living and the application of the Social Model of disabilities.

Center for Research and Analysis (CRA)

CRA is a non-governmental, non-profit organization with expertise in analysing the prospects and the impact of education and science on the society and on economic development. CRA maintains contacts with national and international universities, research centres and organizations in the field of education, science and innovation.

Union Professionnelle des Travailleurs Indépendants Handicapés (UPTIH)

UPTIH is an association which represents the interests and facilitate access to entrepreneurship for disabled self-employed workers. Currently the only association which combines the two issues of entrepreneurship and disability within France with 300 members, 100 of which trained through its trainings, ad-hoc tutoring programmes and workshops.

Biedrība Eurofortis (BEFO)

BEFO is a multicultural non-governmental organization that aims to facilitate continuing education of schools, enterprises and society and supports the development of different competencies, as well as personal and professional skills.

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