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Middle Level Education Aims for Equity and Inclusion, but Do Our School Websites Meet ADA Compliance?

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Abstract

An often-overlooked component of a middle school website is the necessity for that website to be accessible to those with disabilities, while following the guidelines of the Americans with Disabilities Act (ADA) and Section 508 of the Workforce Rehabilitation Act. In support of the belief that support the belief that inclusive education and respect for diversity should be integrated throughout the school, this study investigated the accessibility of middle school websites in Indiana, Kentucky, and Ohio by selecting a random sample of 150 schools and analyzing their homepages using WAVE (Web Accessibility Versatile Evaluator), which reports accessibility violations by annotating a copy of the page that was evaluated and presenting embedded icons and indicators to disclose breaches with ADA. Out of 150 districts, 54% had errors that need immediate attention and all 150 schools had alerts of likely violations that ranged from alt-text omissions and empty or confusing links to issues with color contrast and keyboard-only navigation. The article proceeds to give practical suggestions for eliminating many of the errors, even for those shareholders with less than sophisticated technological expertise**.**

INTRODUCTION

An essential attribute of the philosophy for middle level education is a school environment that is inviting, safe, inclusive, and supportive of all. Likewise, families and the community are to be actively involved (Association for Middle Level Education, 2010). A high-quality middle level education should be available to all children under the same conditions. Ensuring equity and access for students means providing them with opportunities to learn based on their individual needs, preventing their personal circumstances from becoming a barrier to learning, and helping all children strive and grow into their potential. This study was undertaken to investigate the accessibility of middle school websites throughout a tri-state region of Indiana, Kentucky and Ohio to ensure that all facets of successful schools for young adolescents are advancing the collaborative and socially transformative potential of education for middle grades students.

When considering basic tenets of democratic education, Fearnley-Sander, Moss, and Harbon (2001) emphasized the importance of participation, practices of respect, and recognition of equal worth and entitlements. It would be only reasonable to expect that such commitment to the academic and personal development of students would extend beyond the mere "bricks and mortar" physical structure of the building and comprise those virtual features of the educational process that are not inherently face-to-face. The school website is one such tool utilized by most middle schools to communicate. The digital evolution that transforms every facet of schools is profoundly impacting school websites, shifting them from their traditional peripheral position to being core and critical to the school's everyday operations, teaching, growth, and enhanced productivity (Lee, 2013). The school website is indeed the gateway to the school and acts frequently as a first source of promotion and dissemination of information for all stakeholders from administrators to teachers to students to local citizens, or, as DeLoatch (2015) insisted, the website is the hub for the entire school family.

Often lost in the zeal, or, perhaps, obligation, of creating a dynamic school website is the necessity for that website to be accessible to those with disabilities, which range from visual and auditory to speech, mobility, neurological, and cognitive impairments. With importance placed on interactivity and overall visual appeal, the growing sophistication and complex graphics of much of the material can lead to incompatibility with assistive devices, such as screen readers, screen magnification software, Braille output systems, and adapted keyboards, rendering the information inaccessible to the user. Educational organizations that have not prioritized the accessibility of their online pages, mobile site, or applications may be

discriminating against current and potential students, alumni, student family members, job applicants, and any member of the public who accesses the school's information online (Cullipher, 2017). According to the Individuals with Disabilities Education Act (IDEA), Title II of the Americans with Disabilities Act of 1990 and Section 508 of the Rehabilitation Act of 1973, accessibility applies not only to the navigation of the website itself, but also anything digital presented on the website, including PDF or Word files, mobile applications, audio-visual content, and school-generated video clips on third-party channels like You Tube. Many times, disability is less a function of people's inability to perform certain tasks than it is a function of flaws in the design of the environment (Slatin, 2002).

Middle level students with disabilities can be notably hindered when seeking to access student portals and resources like Infinite Campus; Khan Academy; Google Classroom; content area games; teacher and team webpages; clubs and activities; and links to homework assistance. Providing full access to the school website is part of a broader institutional commitment to the young adolescent's need for affiliation and sense of belonging. Schools can play a significant role in providing students with an overall educative program that promotes freedom and independence within a safe space (Kellough & Kellough, 2008). During early adolescence, psychological development is characterized by identity formation and the quest for autonomy. The opportunity to successfully navigate a website – irrespective of disabilities – and locate information, make decisions, or engage in online learning platforms allows the young adolescent to experiment with various roles and experiences within the larger school context.

Correspondingly, an accessible website can provide a welcoming and engaging environment for diverse families, which is critical to establishing successful communication and adhering to one of the characteristics of successful schools that calls for the school to take the initiative in actively involving families in the education of their children (Association for Middle Level Education, 2010). However, when accessibility is compromised, parents or guardians with disabilities can encounter barriers when downloading crucial written documents and policy statements such as student handbooks. Difficulty in accessing teacher and staff email, school calendars, lunch menus, supply lists, medication permit forms, newsletters, PTO meeting times, fee schedules, and online progress reports are examples of other potential impediments that can occur when the website is not in proper compliance with guidelines. In addition, many of these downloadable documents may themselves fail to comply with Title II of the Americans with Disabilities Act under the stipulation that public schools must provide appropriate "auxiliary aids and services" where necessary to ensure effective communication of all school district materials (ADA. gov, 2007).

In addition to the importance of an accessible website for students and their parents or guardians, there are implications for the instructors who prepare middle level teachers, as well as the pre-service teachers themselves. As the Association for Middle Level Education (2012) pointed out, middle level teachers must be competent in successfully collaborating with multiple audiences to further the education of young adolescents, including colleagues, families, and communities. Many of the middle schools throughout a given state are institutional partners with regional universities and colleges that provide learning experiences and field placements for pre-service teachers in middle level education. Thus, a high priority should be placed on the exposure of those candidates to middle grades environments that model inclusive communication practices regardless of whether messages are conveyed in person or online. Pre-service candidates must frequently consult school websites to obtain information about board meetings, locations and times of various events, and pertinent school data and contacts. The researcher's university presently has 70 students in teacher preparation who need adaptations for some type of disability, thereby making the ability to properly access their clinical school websites imperative for success within their program.

From a professional teacher's standpoint, an accessible website affords opportunity for students or parents to visit the homepage, locate staff email, and send an email to a teacher, which demonstrates the middle school concept in action by addressing the importance of adult advocacy and comprehensive guidance. Something as simple as that one-on-one connection with a teacher can make or break a student's work ethic and active engagement in school (DiNardo, 2017). In this way an accessible web site can be viewed as an

extension of "school climate" because it encompasses the building of relationships, the promotion of teaching and learning, and the establishment of a positive institutional environment. Only 5% of school districts know if their school websites are fully accessible (Campus Suite, 2017), yet users with disabilities are three times less likely to use such sites for routine tasks, as compared with similarly experienced peers without disabilities, because of the accessibility hurdles they encounter (Klein, Myhill, Hansen, Asby, Michaelson, & Blanck, 2003).

In what has been characterized as a "tidal wave" (Cullipher, 2017), the U.S. Department of Education Office of Civil Rights (OCR) has been receiving hundreds of complaints from all across the United States, from Juneau School District in Alaska to the Nevada Department of Education to Virginia Beach Public Schools, about school websites that are inaccessible to those with disabilities. Beginning in May 2011, the OCR sent "Dear Colleague" letters to K-12 schools alerting them to their accessibility obligations (Samuels, 2016). Half of the civil rights complaints now pertain to disability discrimination, and, out of the complaints, those associated with web accessibility for students with disabilities represent the most rising trend (Cullipher, 2017). Continued violation puts schools at risk of losing federal funding (ADA.gov, 2007).

Although the ADA and Section 508 of the Workforce Rehabilitation Act do not *specifically* identify online accessibility, the content of websites is presumed to be incorporated under existing nondiscrimination laws and, according to the U.S Department of Education, websites of a covered "public accommodation" must be accessible (Podlas, 2015) and access to information is viewed as a civil right (National Council on Disability, 2003). An accessible website should be a critical tool in the comprehensive plan of any middle school in the quest for student, family, and community engagement.

Purpose of the Study

The current study was undertaken to investigate the accessibility of middle school websites throughout a tri-state region of Indiana, Kentucky and Ohio so as to establish a starting point from which the middle level community, from practitioners to researchers, can gauge the need for education, professional development, training, and resources so schools can best serve their constituencies, advance the position of the Association for Middle Level Education, and support student success both inside and outside the physical classroom. The notion of "digital equity" is a social justice goal of ensuring that all students have access to information and communication technologies for learning regardless of physical disability, socioeconomic status, language, race, gender, or any other characteristics that have been linked with unequal treatment (Judge, Puckett, & Cabuk, 2004).

Review of Literature

The topic of website accessibility finds its roots in the *Web Content Accessibility Guidelines* (WCAG), first edited by Chisholm, Vanderheiden, and Jacobs (1999). Subsequent updates, including the widely followed *Guidelines 2.0* initially released in 2008, are part of a series of web accessibility guidelines published by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C), the main international standards organization for the Internet. Improved accessibility depends upon three crucial categories: structure, navigation, and alternative content (alternative ways to access information presented with sounds, images, scripts, and applets). Website errors within these domains were originally identified as Priority 1 (errors that make it impossible for one or more groups to access information about the website. Such issues must be addressed to consider the web site minimally accessible); Priority 2 (Website access is difficult); and Priority 3 (Full website access is somewhat difficult), but later reworded to fall into categories of "success criteria" although the elements themselves remain largely unchanged. In June of 2018 version 2.1 was released and it provides guidance for aspects that were previously absent or underrepresented in 2.0, including the use of mobile devices and increased emphasis on users with low vision, those with cognitive and learning disabilities, and those relying on speech input or dictation software. Inasmuch as 2.1 is viewed as having "backwards-compatibility" (a site that adheres to *WCAG* 2.1 automatically also adheres to *WCAG* 2.0.), the guidelines form the central basis for the Section 508 Standards.

K-12 Websites

The accessibility of middle school websites has received very little attention in the literature. In fact, literature that focuses on the accessibility of K-12 school websites in general is both negligible and dated, which belies the increased emphasis on antidiscrimination in public institutions. A small cluster of authors account for a majority of the research on the topic. In an inaugural study, Bray, Flowers, and Gibson (2003) randomly selected 567 school district websites across the United States and Canada and evaluated them for accessibility. The software program Bobby 3.2 (discontinued in 2008) revealed that 74% of the district home pages were found to have accessibility violations, with the preponderance of issues considered "high priority" in need of correction. Common violations included the need for finding alternate ways to emphasize information currently accentuated by color; providing extended descriptions of alternative text; and identifying the hierarchy and relationship of two or more header rows or columns in a table. Despite the distinction of being "high priority," most problems were deemed to be easily rectifiable.

Bray, Flowers, Smith, and Algozzine (2003) then repeated the study to focus on only elementary school websites and reported that 57% of 244 randomly selected schools had at least one accessibility error. The priority areas were comparable to the ones revealed in their initial investigation: (a) only using color to represent information, (b) not providing extended information for images that convey essential information, and (c) not providing alternative text for images on the page. Wells and Barron (2006) also examined accessibility issues on elementary school homepages. Using a random sample of elementary school web sites, the researchers documented accessibility errors and warnings related to Section 508 of the American Rehabilitation Act and Priority 1, 2, and 3 of the *Web Content Accessibility Guidelines*. The researchers used WebXACT and the Accessibility Toolbar to evaluate the websites. Findings indicated that 91% of the websites had at least one accessibility error related to Section 508, and 84% of websites had at least one Priority 1 error. The major sources of these errors were related to text equivalents for images, with font sizes, screen resolutions, contrast, style sheets, and Flicker also discussed.

When an evaluation of 165 randomly selected middle school was later conducted, 58% of the websites were found to have at least one infraction. Bray, Pugalee, Flowers, and Algozzine (2007) noted that many of the middle school sites used red and/or green to emphasize information for people with visual disabilities, including color blindness; these colors are problematic and require an alternate method for calling attention to important text. They also reported errors such as insufficient contrast between foreground and background features, deprecated language features, and the absence of descriptive titles to links. Heretofore, this study stands as the lone attempt to gather information on middle school-specific websites.

Klein and colleagues (2003) assessed the websites of 157 public high schools in Iowa and reported that only 12 (7.6%) of the sites passed Bobby Priority 1. Ninety-one percent of the sites would have avoided the Priority 1 category if alternative tags had been used in conjunction with graphics. Krach and Jellenick (2009) employed the WebXact online software to determine compliance with federal mandates and reported only about 14% of individual K-12 school home pages and 17% of school district home pages were Web accessible. When data were filtered by type of school, 17.6% of public schools were accessible compared to 7% of private schools. Gonclaves, Martins, Pereira, Santos, and Cota (2013) evaluated 443 Portuguese secondary schools and revealed "the majority of the evaluated websites homepages presented more than 100 errors related to WCAG 2.0" (p. 2647). Several reasons were offered for the prevalence of errors, such as the inexistence of enough information on the number of Portuguese citizens that have some sort of disability or incapacity; the complicated and time consuming decision making by the governmental organizations in the creation of regulations; and the general low levels of sensitivity to the issue of Web accessibility that contributes to significant underestimation of annual budgets.

Necessary Components of School Websites

Miller et al. (2005) described 19 of the most necessary and desirable components for a school website to possess, and omitted any item related to accessibility for disabled users. Similarly, the Web Marketing Association (2018), an organization devoted to recognizing Web

professionals and excellence in website creation, identified six characteristics of an effective school website and included design, innovation, content, technology, interactivity, and ease of use. No direct reference to "accessibility" was made, and the descriptions of 'interactivity' and 'ease of use' focused more on the variety of text and photos available or on principles of site navigation in general.

Summary

The existing literature on ADA accessibility for school-related websites very much points to an unresolved issue. Initial interest in the topic was sporadic at best and there has been virtually no meaningful follow-up to measure progress and improvement. In addition, the evaluation software programs used in previous studies (Bobby and WebXact) were both withdrawn by 2008. Thus, the current study provides a needed update to bring a newer perspective to middle school website compliance and the steps to undertake to ensure that such websites, often the community's first introduction to the initiatives, departments, resources, and calendar of the local school, are providing a high-level usability for stakeholders with disabilities and visitors to these respective homepages. Considering that tools and guidelines are available to help in building accessible websites, and given that public policy supports web accessibility, it is essential to monitor the status of middle level school websites to ensure they are sending a message consistent with the overall philosophy and vision of successful schools for young adolescents.

Conceptualization of the Current Study

The current study is rooted in the Web Accessibility Integration Model (Lazar, Dudley-Sponaugle, & Greenidge 2004), which affirms that accessible websites must be sufficiently flexible to be used by assistive technologies. The intent is to assess whether delivery software applications and online content meet accessibility requirements, while adhering to the principles of legislative compliance. Kelly and Phipps (2006) built upon this model and expanded it to consider social aspects of accessibility that go beyond mere technical "access" and consider the true applicability of materials for individual site visitors. Kelly and Phipp's framework was central to Kokil and Scott's (2017) qualitative work in the exploration of an elementary school website. Although the site yielded high ratings in terms of its visual appeal, the usability post-test uncovered issues compromising its usefulness. Participants cited deficiencies in terms of poor organization of information, and text labels not reflective of the content, resulting in tedious navigation and unsuccessful searches.

A structure provided by Parajuli (2007) further advanced the critical measurement determinants of an efficient school website that included transparency, interactivity, accessibility, and usability. This inquiry is also influenced by Epstein's (2009) key components regarding parental involvement and the ability of school websites to promote home environments that support children's learning and development; communication; volunteering, learning at home, decision making, and collaboration within the community.

Methods and Analysis

A sample of 150 middle schools from Indiana, Kentucky, and Ohio was chosen from Educationbug.org an online educational web directory of all public-school districts by state. The state lists were then checked against the Indiana, Kentucky, and Ohio 2018-19 school indexes from the respective Departments of Education to ensure all middle schools were included in the eligible population. After securing the listing of the public middle schools throughout the given state, a random number generator from statrek.com was used to select a random number to identify the first middle school to be included in the state sample. Afterwards, systematic sampling was employed to select every 3rd middle school until a total of 50 was secured. The process was repeated for each of the three states. The only instances where the systematic selection was disrupted occurred when a school was identified as a "junior high school" or "intermediate school." A school of that nature was bypassed and the next so-named "middle school" on the list took its place, and then the pattern began anew.

The homepage of each chosen school was analyzed using WAVE (Web Accessibility Versatile Evaluator) provided through WebAim, which reports accessibility violations by annotating a copy of the page that was evaluated and presenting embedded icons and indicators to disclose breaches with ADA, pursuant to Section 508 and *Web Content Accessibility Guidelines (WCAG) 2.0*. In this manner, the

information is more comprehensible and relatable than an intricate technical report. WAVE, introduced in 2001, has been used to evaluate the accessibility of millions of web pages (WebAim, 2017). After analyzing a web page, WAVE generates an overall account that highlights "errors" and "alerts." To differentiate, an "error" denotes an almost certain accessibility issue (e.g., image or linked image missing alternative text; a link with no text; video with no closed captioning or transcript) while an "alert" signifies a likely accessibility issue and, thus, a need for further investigation or improvement (e.g., link text may not make sense out of context; home page contains links to PDF files, which often have accessibility issues). An "error" can be strongly equated with a "Priority 1" as identified in *WCAG*. The analysis also posts the results from a color contrast checker because a fundamental aspect of color on the Web for users who are low vision or colorblind is sufficient contrast between foreground (text or graphics) and the background. Many subtle website color designs, however, can render the contrast insufficient for some readers.

Upon receiving this report for each individual site, the researcher proceeded to examine the page and ascertain the source of the error or alert notifications. The findings were recorded on a spreadsheet. Only the elements of the homepage were investigated for each school. Such a strategy is consistent with Jaeger (2006) and Loiacono and McCoy (2006) who argued that if the homepage itself is not accessible, it matters little about subsequent pages. Further, the majority of software programs designed to examine accessibility (including WAVE) are not fashioned to evaluate multiple pages simultaneously. Any link or file originating from the homepage, however, was checked manually to determine the accessibility of the linked document or audio file.

Findings

The results in Table 1 indicate the cumulative totals for each of the 150 schools by state and signify the percentage of schools from each state that were shown to have at least one of the errors or alerts specified by the given column heading. As displayed, the WAVE tool draws attention to errors, alerts, and issues with the colors and contrast combinations utilized on the homepage. To further extract the findings, Table 2 segregates the types and numbers of individual errors identified by the evaluation.

Table 1

Errors, Alerts, and Contrast Violations by State

State	Errors	% of Schools	Alerts	% of Schools	Contrast	% of Schools
Indiana (n=50)	313	68%	2,082	100%	709	94%
Kentucky (n=50)	122	34%	5,009	100%	797	88%
Ohio (n=50)	261	60%	3,036	100%	1,066	78%
Cumulative (n=150)	696	54%	10,127	100%	2,572	87%

Table 2

Totals by Category

Cumulative Error

Error Type	Alternative Text	Empty Link	Use of "Click Here"	Empty Header	Other Assorted	Total Errors
Number	392	146	90	14	54	696

Most Frequent Errors

The "errors" discovered on the middle school websites most closely coincide with the Priority 1 Checkpoints as described in the seminal *WCAG* 1.0, which caution that Web content developers *must* satisfy these checkpoints. Otherwise, one or more groups will find it impossible to access information on the page. As the findings revealed, errors dealing with alternative text (i.e., alt text) were the most common issues occurring across the middle grades schools in the investigated region. The evaluation tool highlighted several types of alternative text errors within the individual webpages, most resulting from the failure to describe either the nature or content of single images or images contained within a link. The next most prominent area of concern involved empty links. When a link contains no text, the purpose or function of the link will not be presented to the user, which can bring about confusion for keyboard and screen reader users. A similar link-related error involves the use of "click here" in place of a descriptive link. This failure describes a common condition where links such as "click here" or "more" are used as anchor elements where one needs to have the surrounding text to understand their purpose and where there is no mechanism to make the destination clear by itself.

The presence of empty headers completed the list of frequently occurring errors. Screen readers alert users to the presence of a heading tag. When the heading is empty, or the text is inaccessible, this can either confound users or prevent them from accessing information on the page's structure (DeQue University, 2017). Large percentages of the schools across the three states were also shown to have issues with color contrast. Anything on the website that is indicated by color needs to have a secondary way for it to be distinguished. Further, foreground text needs to have sufficient contrast with background colors. Similarly, the failure to ensure that all information conveyed with color is also available without color was a repeated violation.

The "Other Assorted" category contained title attribute errors, which indicate that a title intended to provide additional or advisory information simply repeats the wording found in the element text or in the alternative text. Accessibility with online forms (i.e., free and reduced lunch, transcript requests, etc.) was a recurring error as well. Instructions related to form fields are typically locked to prevent editing of non-field content. However, that makes the instructions related to those form fields unreadable to a screen reader. All form fields, checkboxes, or dropdown menus should be labeled clearly and capable of being read by screen readers (Bureau of Internet Accessibility, 2018). Also prominent were errors involving a "marquee" on the page. Most middle school homepages have some type of colorful banner or marquee, often depicting the school name and sports logo. Text on a banner image, however, cannot be read by a screen reader or a search engine; it also disappears if users turn images off in their browser settings. Therefore, the text should always be coded in HTML format, either overlaying the banner graphic or hidden behind the banner graphic. A less frequent, yet serious error involves seizure disorders. While the majority of content on the examined pages was free of high-risk flashing, flickering, or strobing, some did contain "dramatic" effects that could present difficulties for users with photoepileptic tendencies. It should also be noted that online videos sometimes present special effects that do meet thresholds established by *WGAC* 2.1

Manual Evaluation

Cullipher (2017) pointed out that automated testing tools can miss critical elements, so they should always be coupled with manual testing for a truer sense of accessibility standing. Thus, in addition to inspection by the evaluation tool, the pages were also manually assessed to not only further identify and scrutinize the areas which were deemed to be problematic, but to reveal accessibility issues that were not exposed on the homepage itself or that emanated from the homepage. It was determined, for example, that 75% of attached files (i.e., Word or PDF documents) contained images for which no alt tag was present, and over 60% of the middle school websites contained links to audio files with no transcript provided. Close to 60% of middle schools used images containing text (i.e., text embedded over an image) that cannot be read or translated. Approximately 40% of webpages made use of text that did not retain readable form when resized to 200%. Over 25% of the websites examined were found to have a lack of keyboard-only navigation. The presence of animations, which can be problematic for some assistive devices, and web pages that were "busy" with little white space were also noted.

Discussion of the Findings

The findings suggest strongly that accessibility compliance for middle school websites within a tri-state region has not been achieved and several prevalent breaches are in evidence that result in non-conformity with ADA guidelines and, therefore, incongruence with the spirit of the middle school concept. The states had some variability as to the numbers of errors and alerts, but they demonstrated an overall sameness, which could be indicative of a wider trend, especially when considered along with prior research conducted on the topic. Out of 150 total middle schools, 54% had errors that need immediate attention and 100% of schools had alerts. While the number of errors varied by individual school, the tri-state average was five errors per school, which may seem like a small number, but, again, an "error" is indicative of a serious "red flag" infraction that is currently impacting the ability of some users to access the webpage. Such errors typically point to compatibility with assistive technology and must be corrected immediately. Given that more than a decade has passed since Bray et al. (2007) first reported 58% of middle school websites were out of compliance, the decided lack of progress is striking, especially when a preponderance of the errors can be corrected rather easily.

Recommendations for Creating Awareness

The first step in bringing middle school websites into ADA compliance is to generate simple awareness among all stakeholders who design or contribute materials to the webpage. Most accessibility errors on web sites are the result of lack of awareness, rather than apathy or malice (WebAim, 2018). A comprehensive plan for accessibility needs to be initiated from the outset rather than coming about as a reaction to internal or external complaints or pressures. At the very least, middle schools and their home districts should attempt to bring about accessibility in an incremental fashion because any improvement is more advantageous than the status quo. While some of the errors and alerts must be addressed by webmasters and other vendors, many corrections can be made by those with less technical training through mere diligence about the items uploaded to the site.

Groves (2011) conceived a scale for prioritization, which could be very useful for middle schools in bringing about needed change based upon utilizing the school's developmental resources in the most efficient manner: (1) High impact- Homepage visitors will be unable to perform important tasks or unable to understand basic content if this issue is not addressed; (2) Medium Impact- Visitors will be able to perform important tasks and understand basic content, but with a noted level of difficulty if this issue is not addressed; (3) Low impact- Visitors can perform most important tasks but may be inconvenienced if this issue is not addressed. Groves also noted the same mistakes will often by found over and over. Some of those mistakes will be repeated because common code is used throughout the site or they are part of a template.

Fixing the Easily Fixable Alternative Text

As was displayed in the findings, the lack of alternative text for images accounted for 56% of all total errors detected by the evaluation software. Alternative text should describe the meaning of each image rather than merely its appearance. The term "image" encompasses logos, maps, and clipart. The editing feature on the webpage should allow for the addition of alternative text. If the image on the page conveys either simple information or complex information (e.g., chart or graph), the alternative text is mandatory. If the image is purely decorative and does not contribute to the understanding of content, it is possible to forgo the alternative text in that situation, although it is best to develop consistency by supplying a description for all images uploaded or offered via a link.

Checking Documents for Accessibility before Uploading to Webpage

It is extremely important to check documents and electronic presentations for accessibility *before* uploading them to the website or linking to them from the homepage. Due to the nature of educational institutions in general, a website can literally be a sea of documents for parents, students, and the community. Many may be unaware, however, that both Microsoft and Adobe can be very helpful for identifying ADA issues. Word, Excel, Outlook, OneNote, and Adobe have built-in accessibility checkers that alert users to concerns found within any document or presentation. These programs will identify the place in the document or presentation where the issue is found, thereby not only showing users where there are issues but informing them on the types of items a

screen reader would have difficulty speaking. These built-in accessibility tools in Word and Adobe are indispensable for administrators, teachers, or staff who use written documents, PowerPoints, and PDFs to post content on a webpage. Teachers, for example, may unknowingly overlook accessibility within an uploaded PowerPoint, but such presentations frequently contain graphics, animation, and pasted images, which require text equivalents and text transcripts if audio is embedded. Creating documents or presentations that meet ADA expectations is among the most basic and easily achievable steps that can be taken to ensure an accessible school website.

Creating Transcripts for Podcasts and Video Resources on Webpage

The absence of closed captioning, or available transcripts, for audio and visual media is also at the top of the list of infractions that can be corrected without the need for a sophisticated background in Web technology. The task of developing transcripts for podcasts, videos, and screen captures is certainly doable for most middle schools but is admittedly time consuming and tedious. Voice typing with Google Docs is available through Chrome for desktop as well as the Docs apps for Apple iOS and Android. If using a microphone to create a podcast or transcript from scratch, Google Docs has a beneficial feature that will allow the user to generate a transcript as content is spoken. The program will recognize the microphone and as the user begins speaking, it will type the text that it hears spoken. It also recognizes punctuation commands such as comma, period, new line, and new paragraph. The voice recognition is very accurate and allows users to speak their thoughts without having to type a transcript at the same time. This transcript can then be shared, downloaded or linked to a website. There are also other readily available and straightforward voice-to-text tools like Voice Base and Trint to assist in this endeavor.

What's Wrong with "Click Here?"

Many sight impaired users who rely on screen readers call up a dialog box that has a list of links from the page. They use this list of links to decide where they will go. But if many of the links in that list simply say "click here" or "more" they will be unable to use this feature in their screen reader, which is a core navigation strategy. It is equally true for people who tab through links. If all they hear as they tab through the document is "click here, click here, click here etc." they will become confused, or as the American Foundation for the Blind (2018) explained, "click here" is mystifying, especially when heard over and over again. Descriptors like "Create your own blog" are self-explanatory, and let the reader know what to expect.

Potential Implications for Middle Level Students

As long as the aforementioned issues remain unresolved, a school may be failing to expand the educational experience to as many students as possible. Ryndak, Jackson, and Billingsley (2000) insisted that inclusion must be established throughout an entire school system, not just in individual classrooms. The basic philosophy and belief structure that undergirds inclusion must guide a school's practices and set the tone of acceptance of all students (Vaughn & Schumm, 1995). From an emotional development standpoint, middle grades students often believe that their experiences and problems are unique to who they are. They can be critical of themselves and easily offended as they become increasingly aware of how they compare with others (Kinney, 2015). The feeling of being "left out" because they cannot access the school website like their peers or simply the personal frustration at not being able to engage the features they want or need on the website can be alienating and may cause students to feel disconnected in other ways that extend beyond the website accessibility. Their experimentations with self-sufficiency may be impeded at the very time they are seeking to take more responsibility.

Limitations of the Study

The middle school web pages that were evaluated represented only a sample from the three states and the possibility of sampling error cannot be minimized despite the attempt to ensure a random selection. The assessment tool used for webpage evaluation is not definitive and cannot detect every compliance issue found in the Section 508 and *WCAG 2.1* guidelines. Also, the WAVE tool does not produce a hierarchy on the severity of reported "alerts." Thus, human inspection is imperative, yet such judgment when examining the data is a reliability factor to be considered. Another limitation is that the websites were evaluated only once and on specific days, thus providing a snapshot, but not

necessarily a conclusive judgment of a single webpage beyond the point it was initially examined. As Gu (2017) concurred, "The changing content of a webpage could be problematic for data collection in terms of the stability of the data" (p. 136).

Recommendations for Future Research

Because the school website and individual teacher (or team) websites are often interconnected, it would be important to investigate the accessibility of the teacher websites themselves. Some districts provide IT support and facilitate the "piggybacking" of teacher sites with the overall school site, while other districts leave teachers to fend for themselves for classroom-specific sites, which brings about a situation where the teachers utilize various platforms and maintain pages with different appearances and addresses. Either scenario can be problematic because if the school homepage has specific errors and alerts, the probability is high that the teacher webpages will share the same non-compliance. Further, if teachers locate webpage building companies on their own, the likelihood of accessibility issues will also be increased due to a lack of consistency and accountability.

Concluding Thoughts

The goal of this inquiry was to investigate a sampling of middle school websites within the tri-state region of Indiana, Kentucky, and Ohio as part of an overall attempt to heighten awareness for all middle level schools of the importance of website accessibility. The objective was to provide critical, yet easily understood, data to those affiliated with middle grades education, while emphasizing the wisdom in being proactive with online development. The researcher also provided a baseline to surmise where state school districts stand at this point in time in their quest to create effective and efficient websites, specifically in the areas of design, navigation, usability, content and interactivity.

While it would be an exaggeration to allege that *every* error and alert will automatically prohibit a website user from understanding the meaning of content, WebAIM (2017) considers the presence of alternative text as the first principle of web accessibility, while Higgins (2016) pinpointed a lack of accurately captioned videos as another significant, but easily correctable, accessibility issue that needs prompt attention. Thus, if a given middle school website has addressed alternative text on the homepage itself, corrected accessibility issues in Microsoft and Adobe files, and provided closed captioning or transcripts for audio and visual media files, the school has made significant strides in bringing the webpage into compliance with ADA expectations.

A middle school's website has increasingly become the interface for the school's community and a medium that facilitates the integration of all the school's operations in and outside the school walls (Lee, 2013). Prominent middle grades researchers (Matzen, Ryndak, & Nakao, 2010; Wehmeyer, Lattin, Lapp-Rincker, & Agran, 2003) support the belief that inclusive education and respect for diversity should be integrated throughout the school. Consistent with the overarching framework of successful middle level schools is the need for empowerment and the value of exploration. A child's inability to access technology is counterintuitive to taking charge of one's life and participating fully in the options afforded by the learning environment. The integration of equity and democracy may therefore begin in perhaps the most innocuous of places…. the school website. What message does it send about the commitment of middle level education to giving a voice to all students?

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