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Research Article

Web Simplification Prototype for Cognitive Disabled Users

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Information and communication technology (ICT) and World Wide Web (WWW) are increasingly being used in daily life and becoming important in community, business, personal performance, and improvement of livelihood. people with disabilities (PWDs) can easily perform many tasks using WWW which might be difficult or impossible for them. However, many websites applications such as e-learning, e-commerce, and e-government are not specifically designed keeping in view PWD users. Through the web accessibility guidelines, web developers can build a web program accessible to PWDs. In this paper, we have investigated the issues related to website design that make it unavailable for PWDs. Keeping in view these issues, we have built a framework to make the web easier for PWDs. In addition, these issues are assessed using the GTmetrix, Netcraft, and WAVE accessibility tools and the results are generated using Google Analytics. Based on these results, we have proposed a simplified web version to improve website access for people with disabilities. The proposed prototype is also implemented on a website called Easywebcare by incorporating our recommendations for resolving the investigated issues. Analytics shows that the proposed type surpasses all existing activities in improving website accessibility for people with disabilities.

1. Introduction

The word "simplification" in web design refers to removing all unnecessary components from a website. To preserve consistency, it usually refers to a sleek and clean layout with a consistent color theme. The user's attention is drawn to the uniformity and thickness of the design. Building websites and software that are open to people with developmental disabilities impacts every area of design and implementation. For example, in a website that used complex color schemes and too many components, people who scrolled through the website would lose their inherent interest for one reason or another. Simplicity can have a positive impact on a website in a variety of ways. First, through consistency and uniformity, simplicity enhances the legibility of the website design. This will ensure that consumers are focused on the areas where the company needs them to be. The website's uncluttered appearance enhances the user's first impres-

sions. An easy and appealing appearance is always pleasing to the eye. The website's simplicity makes it easy to customize for future expansion or modifications [1].

1.1. Web Simplification with Cognitive Disability. People with cognitive disabilities, like many others, prefer simple information presentation and interactions [2]. However, how can these essential user experiences be made available? There is currently no automated way to simplify an existing situation interaction with the user. When creating mobile versions of websites, features are often removed, content is simplified, ads are removed, and the number of interactive components is reduced. This content simplification will significantly decrease the time it takes to complete basic tasks, but performance is primarily determined by the physical characteristics of the device being used [3]. There are a large number of individuals who suffer from cognitive impairment. While definitions vary and good data for the global

TABLE 1: Three types of adaptive action limits.

Conceptual skill	Grammar and education; concepts of capital, time, and quantity; and self-direction
Social skills	Social responsibility, self-esteem, gullibility, relational problem solving, and the desire to obey rules, conform to laws, and prevent victimization
Technical skill	Everyday life tasks (personal care), workplace abilities, healthcare

TABLE 2: Etiology of cognitive problems.

Medical problem	The syndromes, infestations of worms, malnutrition, hearing and sensory dysfunction
Chronic problem	Epilepsy, cerebral paralysis, habitual snoring, and significant sickle cell anemia and thalassemia
Below average intelligence	History of development delay
Neurobehavioral disorders	Specific learning impairment, ADHD, autism
Emotional problem	Sexual violence, breakup, or sibling loss
Psychiatric disorder	Depression
Environmental causes	Noisy place, too much TV watching,

population is lacking, it is fair to estimate that 400 million people globally have some form of cognitive disease. Learning, problem-solving, recalling, planning, and decision-making are all affected by cognitive disabilities, which can be caused by a variety of factors such as developmental diseases, brain injury, aging, or severe mental disease [2].

1.2. User with an Intellectual Illness. Intellectual difficulty is described in the diagnostic and statistical manual of mental disorders (DSM-5) by the American psychiatric association as a collection of impairments that affect an individual's intellectual functioning and adaptive actions of an individual [4]. Intellectual disabilities are a type of neurodevelopmental disease identified by a standardized intelligence examination and structured clinical examination. The condition is described by the American Association on Intellectual and Developmental Disorders (AAIDD) [5].

Social abilities include interpersonal abilities, social responsibility, self-esteem, gullibility, naivety, social problem solving, and the capacity to follow and obey the rules of society. The ability to comprehend time, finance, and language requires conceptual skills. Practical talents include using instruments, performing everyday life tasks, and interacting with other persons. In response to daily challenges and simple/complex tasks and demands from our culture and society, all these skills are learned during growth and carried out. The several validated instruments help evaluate adaptive behavior limits [6]. The IQ test is a powerful instrument for assessing intellectual functioning, which is the mental ability to read, reason, solve problems, and so on. A true and correct test score below or near 70 or as high as 75 suggests an executive functioning limitation. Other evaluations identify adaptive action limits, covering the three types of skills shown in Table 1.

1.3. Cognitive Defects. The concepts for intellectual and developmental disabilities address the need for formal terminology in psychiatric and health services. However, in doing so, they also take rigid approaches that bring little emphasis on the people themselves [7]. Cognitive disorders in children include mental retardation in children with average intelligence and individual cognitive disabilities. In academic success, children with mild mental retardation, the most prevalent type, are restricted and thus have minimal occupational opportunities. Typically, people with soft developmental disorders lead autonomous lives. Children with more extreme (mild, severe, and profound) mental illness ratings are more likely to have, in addition to cognitive impairment, various disorders (e.g., vision, hearing, motor, or seizure) and be dependent on others throughout their life for basic needs [8].

Cognitive impairment means comprehending new or complicated information, and learning and applying new skills are substantially diminished. Disability focuses not simply on the health problems or impairments of an individual but also and decisively on the degree to which environmental factors facilitate the complete involvement and integration of the child in society [9]. There are more than one billion PWDs (World Health Organization, 2011). Therefore, as denounced by the CRPD, entry obstacles to learning resources perpetuate the social isolation of PWDs; 177 countries have adopted it (Convention on the Protection of PWDs; General Assembly, 2007, 10). Tables 2 and 3 show the etiology of cognitive problems and classification of cognitive disability, respectively.

1.3.1. Users with Disabilities and Their Illnesses. Neurological disabilities include intellectual and developmental disabilities; autism spectrum disorders; serious, permanent psychiatric illness; brain injury; stroke; Alzheimer's disease; and other dementias. More than 630 million individuals are estimated to have a form of cognitive impairment worldwide, representing more than 60 percent of PWDs worldwide. Many reasons range from lack of economic access to limited accessibility of websites; people with developmental disabilities have lower rates of Internet use. People with developmental disabilities are also some of the country's weakest and have problems affording Internet access. According to

TABLE 3: Classification of cognitive disability.

Level	IQ score	Characteristics
Mild	55-70	Work freely with environment and social support
Moderate	40-54	Trainable task, acquires expertise in conversation, must live and work efficiently within society
Severe	25-39	They can learn very basic talents of self-care and certain leadership skills
Profound	Below 25	Needs good scrutiny, could learn fundamental skills in self-care

a published report, the WHO has disabled over one billion individuals living around the world for multiple kinds of illnesses. These affected persons consider themselves individuals with long-term disabilities. Psychological or visual impairments form a barrier or impediment to sensory condition to participate and participate successfully in all social activities, such as all individuals [10, 11].

1.4. Cognitive Condition Effects on Users. Increased communication and other stimuli by people with illness disrupt communication, which is a way to replace the lack of capacity to construct and interpret oral and written communication. Under the Convention on the Rights of PWDs of the United Nations (UN), persons with disabilities shall have freedom of speech and opinion. Knowing through all modes of contact of their choosing is essential, and their role in culture is necessary. The Internet has become an essential and fundamental part of society, increasingly. It has become part of our daily lives, especially for younger age groups; it is easy to access and use. That is a highly significant consideration when youth cannot access traditional health services; the Internet also provides them with a health service and a safe and secure health information database [12, 13].

Cognitive condition is also called mental retardation and is a term used when a person has certain limitations in functioning and developing skills such as communication, self-help, and social skills. These limitations have led to the fact that the child will learn and grow less than the average child. The helpful technology can reduce the impact of these problems and improve the quality of your life. Many technologies are currently being investigated, and the success of this new technology requires an understanding of the barriers to the use of modern technology, including those with intellectual limitations, cognitive limitations in the construction process and technologies, and crop transformation from market analysis. There are many factors, from the lack of access to economic access and limited access to the website to people with mental disabilities with low levels of Internet use. People with mental disabilities are also among the poorest in the world, and they face problems while using the Internet. Different types of people living with disabilities and various disabilities have individual knowledge of the use of the website. When there is no mental disability, then we will have to deal with a lot of evolutionary problems during our testing, troubleshooting these issues and getting the website named Easywebcare. This study examines these issues using strategies such as GTmetrix, Netcraft, WAVE accessibility tools, and Google Analytics, and these results show that many websites

are designed to meet the accessibility standards of PWDs. As a result of these results, recommendations are being made to improve access to websites for PWDs.

2. Background and Literature Review

According to W3C, web accessibility means PWDs can use the web. "Web accessibility implies that people with incapacity can use the web, according to W3C."Accessibility, according to ISO (2008), is characterized as the "usability of a product, service, atmosphere, or facility by people with the widest set of capabilities." For web accessibility, there are different guidelines and resources, but the most important are W3C, ISO, and Section 508.

2.1. Web Content Accessibility Guidelines (WCAG). The World Wide Web consortium developed web accessibility initiative (WAI) in 1997 to design standards for web accessibility. The aim of WCAG 2.0 is to promote accessibility to people with disabilities, to help access, retrieve, translate, and run the knowledge, information, and media shown on web pages following the four web content principles [14]. Under the 12 rules, WCAG 2.0 covers a set of checkpoints. Based on its effect on accessibility, the W3C working group allocated priority levels to each checkpoint. Web content accessibility guidelines for websites have been defined in Table 4. A total of three priority levels are identified, and there are numbers of checkpoints for each that need to reach the corresponding level of agreement [15].

2.2. Approaches to Web Accessibility. Web accessibility covers an incredibly diverse spectrum of problems, from low-level technical obstacles to high-level usability impacts. To ensure equal access to web information, works at various infrastructures and accessibility problems are involved. There were four dominant practices in the accessibility industry to boost usability for people with disorder in the work review.

2.3. Cognitive Illness and Learning. In a long fight for acceptance of their right to manage their lives, people with developmental disabilities are winning. Access to the Internet is key to this regulation in an information society. There are diverse cognitive obstacles to this entry, representing the variety of human cognitive faculties, change in promoting configurable methods of presentation and engagement and reflecting the significance, as well as the type of results [16]. A summary of the websites for people suffering from dyslexia is stated in Table 4.

TABLE 4: Websites for people suffering from dyslexia.

No	App/website	Functionality
1	https://learningally.org/	Provides audio books for a student of (pre-K to 12)
2	https://www.naturalreaders.com/	Reading web pages, emails, narrates, YouTube videos, and texts can be challenging for dyslexic students
3	Dyslexia quest	It is an app that looks and feels like a game but is designed to help dyslexic kids and teens work on memory skills, phonics, and sequencing—all skills that dyslexic students typically struggle with
4	Ginger page	Ginger page is a more sophisticated word processor that can help dyslexic students write flawlessly by helping them avoid spelling errors
5	Open web	Open web is a web browser that converts text into a dyslexic-friendly font, allowing dyslexic students to read with less difficulty. It is useful for times when text-to-speech is unnecessary or disruptive

2.4. Website Simplification Testing Criteria for Special People. Urdu linguistic text simplification system efficiently handles case markers and requires a standard corpus present in this research. We also give a side-by-side comparison for scoring a corpus of complex-simplified sentence pairs and evaluating text simplification assignments in Urdu. The best model receives a BLEU score of 80.15 and an SARI score of 80.15. And automatic evaluation resulted in a 42.02 score [17]. While the number of persons with impairments in society has been quickly increasing due to demographic trends long recorded by various studies, political authorities have paid little consideration to their requirements while developing and implementing web projects. As a result, all citizens must have access to all e-government resources on an equal basis. According to the findings, the most common priority-1 accessibility barriers discovered in this study relate to the lack of text counterparts for nontext elements and the failure of static equivalents for dynamic material to update when the dynamic content changes [18]. Building websites accessible to everyone, regardless of ability or condition, is referred to as online accessibility. The W3C web accessibility initiative (WAI) was created to promote universal accessibility. The web accessibility initiative (WAI) creates rules to help ensure that web pages are generally accessible. Assistive technology is used to help disabled people increase, develop, and retain their ability to perform things that are difficult or impossible to do without it. This research is aimed at looking into existing standards and seeing if they can be applied to educational institutions' websites. That will improve the accessibility of educational institutions' e-learning materials. In this article, a sample of websites from several Jordanian universities is compared to websites from institutions in England and the Arab world in terms of accessibility [19].

2.5. Evaluation Method. The procedure of information and communication technologies (ICTs) to improve formative and developing involvements of persons with logical disabilities has improved greatly. The efficiency of assistive technologies for societies with knowledgeable disabilities contains frequent progress, a basic heuristic evaluation (HE) appropriate for the assessment of screenshots of web pages in advance of an HE implement used for a behavior assess-

ment. The common usability review process uses specialists to estimate the proposal of user interfaces of devices. A small set of inspectors and survey interface reviews its agreement with familiar usability ideologies. Public with intellectual, language, and knowledge disabilities face availability fences when analyzing texts with complex words; a lexical simplification organization for Spanish has been developed. For the various populace for persistence of facilities and creation information recovery, it is a period of information technology and companies around the world choose web skills for electronic facility. Web projects in companies and establishments are strategic and established. Find out efficiency in knowledge associated with reading abilities and remembering. Knowledge for children with intelligent ailment requires to be helped with the use of numerous media connecting with various intelligence. Moderate the lexical and organizational difficulty of a text, while still recalling the semantic significance, and simplify text from both levels of lexicons and judgments. The exceptional education organization has given children by illness much better contact to community education, recognized an organization for cultivating them facilitated with previous credentials of disabilities, and stimulated greater presence of these children together with their nondisabled earls. Regardless of these developments, many difficulties continue. Substitute communiqué organization would allow people with hearing and speaking dysfunction to connect to their emergency state via smart phones or outdated mobile phones via text and symbolic drawings. It should also deliver communiqué opportunity among the substitute situation operative and the use. Extremely customizable request founded on multimodal communiqué to sustain independent living of persons with learning disabilities in singular studios is fixed with demotic devices. A second assessment is in development in order to appreciate tough and weedy opinions together with software and methods used to train operators. Separately, precious by dependability, various knowledge disabilities have simple constrained flexibility and are subject to manifold, sensual, and intelligent injuries. An intellectual stage for allowing communication of this generous of people with others is strategic to be industrialized. Table 5 summarizes the evaluating method.

TABLE 5: Evaluating method.

| No.	Title	Authors	Evaluation method	Users	Results
1	Hands-on experiences with assistive technologies for people with intellectual disabilities	Torrado et al. [20]	Assistive communication, innovative	14	—
2	Heuristic evaluation of paper-based web pages	Anwar et al. [21]	Heuristic evaluation, heuristic violation, usability inspection	3	70%
3	Lexical simplification system to improve web accessibility	Alarcon et al. [22]	Automatic simplification, lexical simplification, implementation	40	64.95%
4	Web accessibility evaluation for disabled	Bakhsh [23]	Accessibility evaluation, human evaluation, success	5	95%
5	Evaluating the readability of text simplification output for readers with cognitive disabilities	Baule [24]	Readability, text simplification, cognitive disabilities	20	—
6	The effectiveness of multimedia in education for special education (MESE) to improve reading ability and memorizing for children with intellectual disability	Munir et al. [25]	Reading ability, memorizing, special education	4	66%
7	Automatic text simplification for people with intellectual disabilities	Chen et al. [17]	Automatic text simplification, intellectual disability, language processing	—	10%
8	Evaluation of web accessibility	Faheem et al. [19]	Web accessibility, multicultural public, web pages	—	45%
9	A study of child with special needs (CWSN) on outcome-based special education	Naseem et al. [26]	Intellectual disability, special education, paraprofessional	—	3%
10	The assessment of children with special needs	Hussu and Strle [27],	Assessment, children with special needs, teachers	232	65.5%
11	AutonomaMente project-design, implementation, and evaluation of a multimodal domotic application to support persons with cognitive disabilities	Anwar et al. [28]	Cognitive disabilities, social networks, augmentative communication	—	35%
12	Emergency communication system for persons with hearing and speaking disabilities and against a large-scale disaster	Sadahiko et al. [29]	Speaking disabilities, emergency communication systems, persons with hearing disabilities	34	32.3%
14	Need and impressions of communication robots for seniors with slight physical and cognitive disabilities	Miura et al. [30]	Communication robots, system usability scale, impressions, and need	12	80%
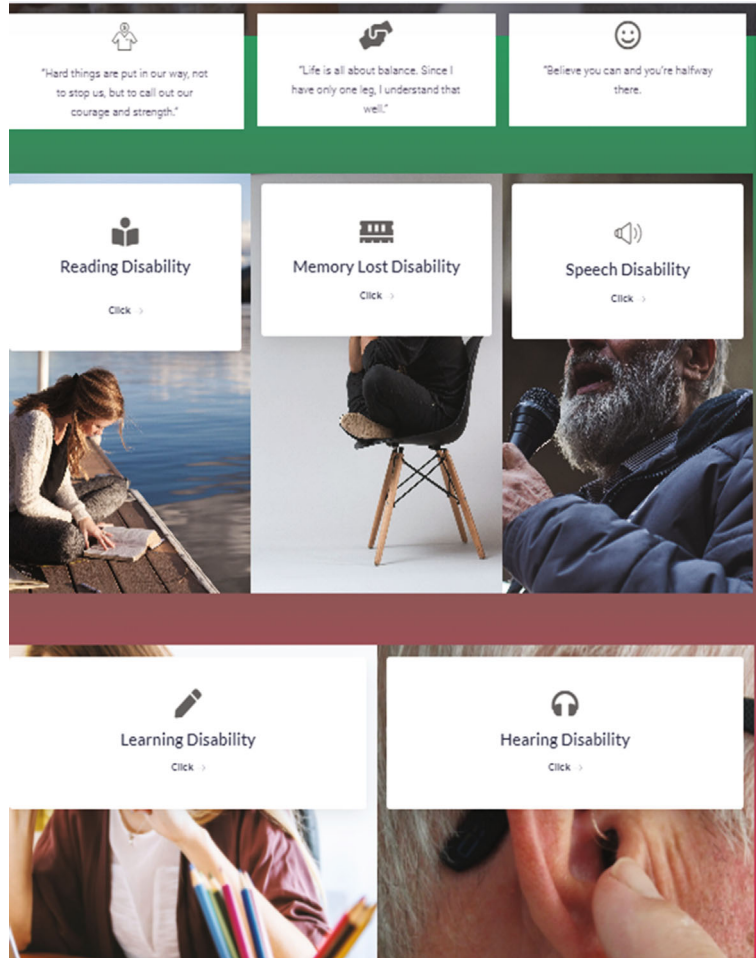
Figure 1: Homepage with disability.
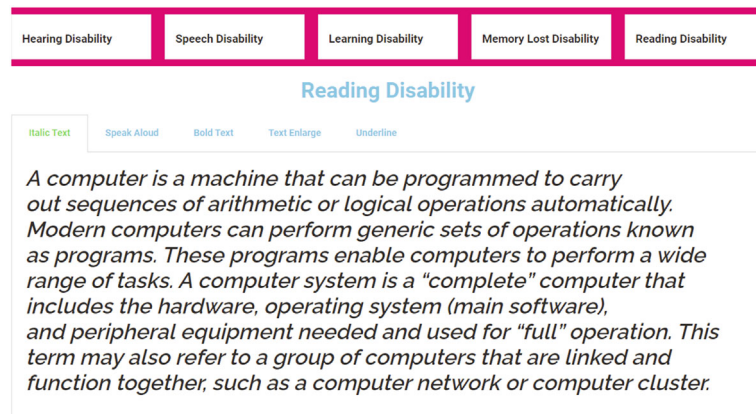
Figure 2: Reading disability with features.

3. Research Methodology

The web application designed in this research project focuses on valuable and easy-to-adapt features for the blind and low-vision communities and the people with disabilities. It provides an insight into web-based assistive technology that would benefit the community of such people. Furthermore, it will provide several options to provide user-based alterations to give a better user experience. Essentially, the purpose of this platform is to ease the use of technology for users. We built the Easywebcare framework to assess the solution to provide effective assistive technologies for
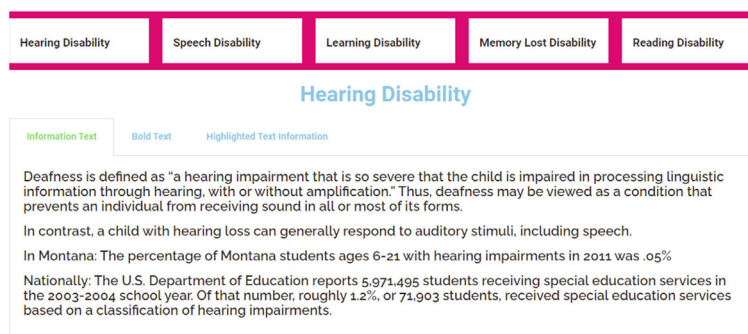
FIGURE 3: Hearing disability with features.

people with cognitive disabilities. Because of many factors ranging from lack of economic access to limited accessibility of websites, persons with cognitive disabilities have lower rates of Internet use. People with cognitive illness are also some of the nation's most impoverished and have trouble affording Internet access. There are various types of disabled people with different infirmities; they do not have any customized experience while using a website.

3.1. Research Questions

(1) How to resolve the issue of accessibility of the website for people with disabilities?

(2) Is it possible to encourage people with intellectual disabilities to access, browse, or engage in online work?

(3) People with disabilities do not get a personalized experience when they use the website, so how can they improve their experience

(4) Is it possible to select evaluation criteria for a user with a cognitive impairment?

3.2. Framework.
The framework does not require any installation or configuration on the end-users. Therefore, they only need to access it using a web browser. The web design is compatible with multiple browsers so that various options can be provided to users. The architecture consists of two main components that are the client-side scripts and the server-side scripts. The client-side script is for the application user interface, web pages, transitions between them, and speech playback operations. At the same time, the server-side script controls the text-to-speech operations and the content-fetching functions.

3.3. Factors to Be Included for Cognitive Web Accessibility.
When considering visual styles as well as content organization, we can improve the user experience by the following:

(1) Using proper headings and lists

(2) Using white space in your design

(3) "Chunking" content into more manageable pieces

(4) Making forms manageable by breaking them into multiple, sequential steps

(5) Providing a logical reading order

(6) Being consistent with fonts, colors, and locations of page elements

(7) Offering keyboard access

(8) Consider providing content in various formats

3.4. Prototype.
The expanded framework architecture allows for more flexibility when it comes to content manipulation choices. We investigated several potential content adaptations as we designed, tested, and experimented with Easywebcare to assess its viability and efficacy in reality. After that, we will go over our prototypes and the things we have learned.

3.5. The Proposed Easywebcare Website.
The first version of Easywebcare enabled users to access mobile websites from a desktop browser by simulating mobile interface demands. Although many mobile websites can be accessed via the URL mentioned above, changing the subdomain to "in." was an unreliable approach. Some websites can redirect users to error pages or the site's homepage without considering the original URL's webpage route, resulting in the user landing on an unexpected link. In essence, the machine would believe it was serving legitimate websites. However, the user will appear in a loop, with all connections and content requests heading back to the homepage, which is of little value to the user. Changing the "User-Agent" string in the HTTP request header was a more traditional solution and adopted more common conventions. The user agent string describes the hardware and software used to render an HTTP request. Therefore, it is more informative than the URL alone, despite the reality that it is in no way an untampered or stable piece of data. In testing, changing the subdomain alone was less successful than using the user agent string to retrieve mobile websites. Easywebcare performed fine in most instances, but the resultant web pages sometimes had several controls and miscellaneous material that had little to do with the page's key content. We wanted to try a prototype in which we would not have to turn the user agent on and off to ensure interactivity and navigation
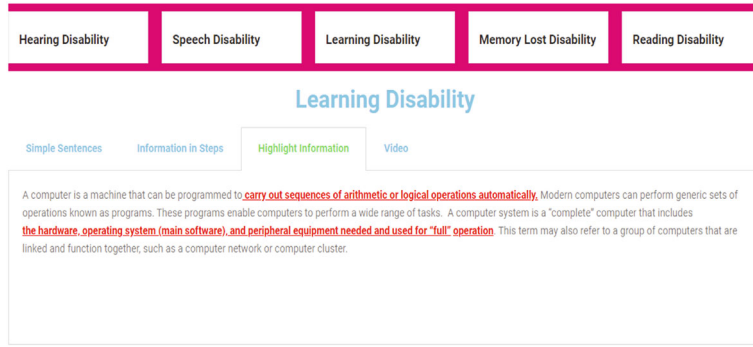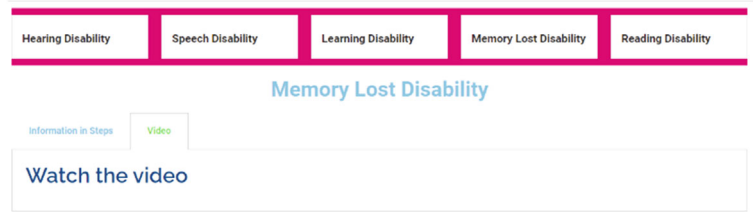
FIGURE 4: Learning disability with features.

FIGURE 5: Memory lost disability with features.

TABLE 6: Important information about the website.

Website name	Easywebcare
Website link	https://kamyabengineer.com/easywebcare/
Site rank	Not present
Primary language	English
Hosting company	http://HostDime.com
Hosting country	US
Name server	http://ns1.host-care.com
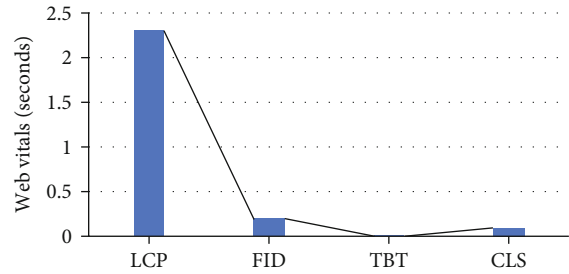
FIGURE 6: Performance graph.

FIGURE 7: Page fully load time.

worked adequately. The bulk of activities are conducted on desktop pages, and critical information is retrieved on-demand with a tap. Users will locate and retrieve data and material they were interested in and enable a more superficial view to read the content functionally. The main content was extracted on-demand via a button from desktop websites for the majority of tasks. Users would find and retrieve information and content they were interested in and then read the content in a simplified view. We discovered the Easywebcare prototype when designing, researching, and initially experimenting with it. To put it another way, the inclusion of the volume slider helped us learn new items. Users were less likely to change the sound early on, preferring to maintain control of whether or not material. Finally, when navigating and reading the information, the leading web find rules are used. In the Easywebcare edition, these controls may be helpful because they would allow blind and low-vision users to identify relevant information on a website and control verbalizations from that point forward. However, the utility of this feature for sighted people was not important enough for them to use it regularly.
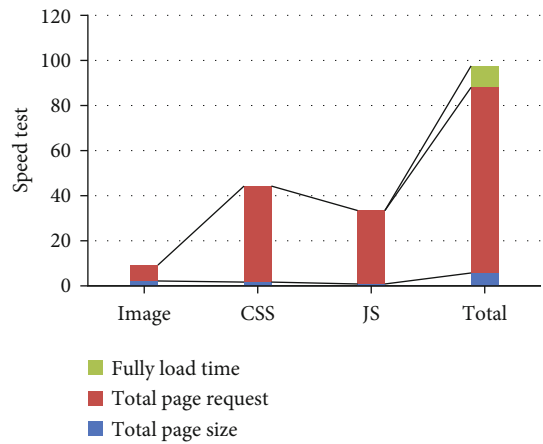
We decided to drop nonessential features and refine the interface to satisfy our target user community (Figure 1) based on our early prototype findings. Since mobile content
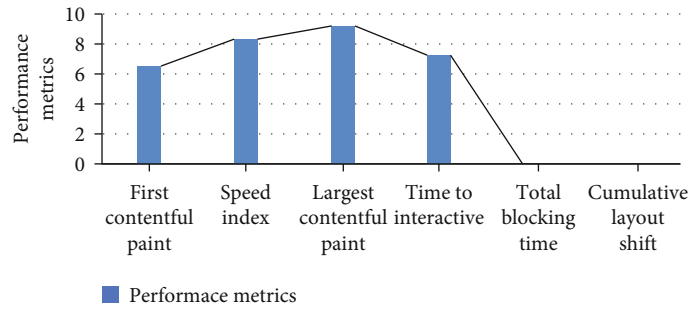
FIGURE 8: Performance metrics.

was no longer retrievable, we removed the find feature, volume controls, user agent collection boxes, and width controls. Two controllers are mounted in place of the previous ones. Figure 1 shows the main disease that our website deals with, and those disabilities are hearing disability, learning disabilities, memory loss disabilities, and speech disabilities.

For users who are facing reading disability, the website Easywebcare gives the features where the user can use speak aloud, bold text, text enlarge, underline, and italic text options while facing reading issue as shown in Figure 2.

For a user who is facing hearing illness, the website Easywebcare gives the features as shown in Figure 3 below; the user can use information text, bold text, and highlighted text information options while facing hearing disability.

For a user who is facing learning illness, the website Easywebcare gives the features where the user can use simple sentence, information in steps, highlighted information, and video options while facing learning disability as shown in Figure 4.

For users who are facing memory loss disease, the website Easywebcare gives the features where the user can use information in steps and video options while facing memory loss issue as shown in Figure 5.

For a set of buttons, the first button determines whether Easywebcare extracted information from the requested website and displayed the results in text and color. Easywebcare is using it as part of an ongoing study initiative, with visitors to the website being monitored and evaluated. Content extraction is performed using the cloud-based tool readability. Readability is a user-facing service that allows users to save links and build reading lists from content around the web. When a user visits their reading lists and clicks a link to read, they are presented with a minimalist view displaying what readability has determined to be the page's primary content. For example, if a user saved a newspaper article for reading later, it was enabled only on the report without any other source website material. Readability's parser application programming interface (API) exposes their material detection and extraction. The API accepts a URL as an input and returns structured information regarding the page's contents. We use the autodetected title, author, date, and content fields for Easywebcare. The readability parser API also returns a confidence score for its analysis, which shows how well the algorithm assumes the original material was categorized. If the content extraction trust score was above
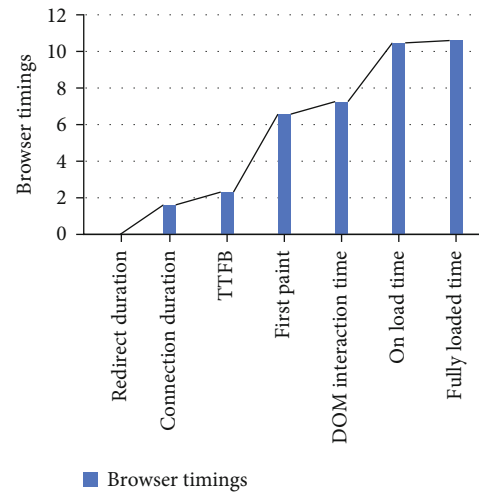

FIGURE 9: Browser timings.

a certain level, this score could automatically simplify a website. It would eliminate the need for a user-facing icon to enable or disable simplification. The readability parser API also offers a trust rate for its study, showing how well the algorithm thinks to grade the original content. If the information extraction confidence score was high enough, it could automatically simplify a website to eliminate the need for a user-facing icon to allow or disable simplification.

The accessible web offered an easy-to-use platform that did not require any initial configuration or installation to promote website simplification for people with developmental disabilities or those who needed a more user-friendly experience visual representation of web content. The architecture and interface were created to be as plain and basic as possible while allowing the user to modify the core features to fit their unique specifications.

4. Result and Discussion

In the functionality testing on website Easywebcare, we use a successful way for PWD and increase web usability. We developed an Easywebcare web app for special people. To test the performance of the website, Easywebcare used GTmetrix Grade blend to check how fast the website page performs and how it will build for optimal performance.
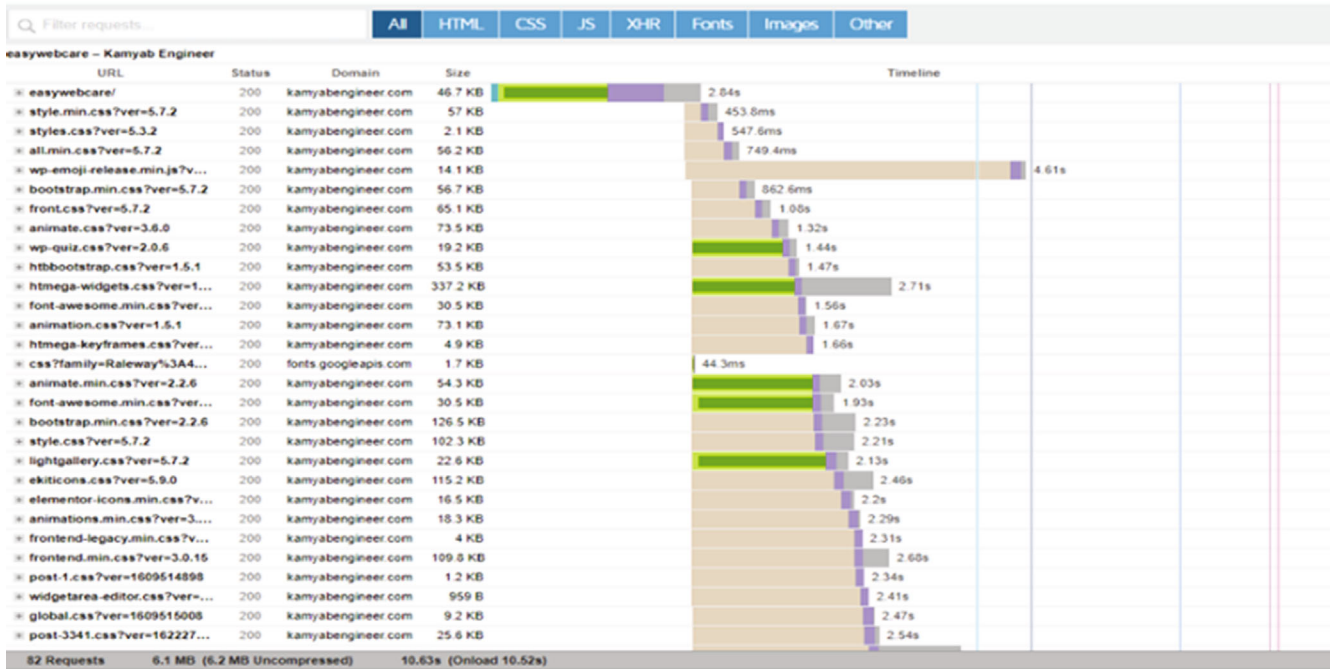
FIGURE 10: Load and request report.

The GTmetrix Grade is a composite assessment of your visitors' page load experience, including both the quality of the design and the actual performance. The GTmetrix Grade is based on a weighted average of two new percentage-based scores: the Grade Point Average (90%) and the score of the structure (85%). And the browsing time of the website is the milestones reported by the browser which include connection duration 1.6 s and backend duration 771 ms; time to the first byte (TTFB) is 2.3 s, and load time is 10.5 s. While checking the functionality testing for disabled user, check buttons, text, and headings and check how easy it is to access the website according to the condition. The real-time user in 30 min is 9, and among them, 77.8% are area mobile users and 22.2% are desktop users, and engaged session of the user is 1.26%. Some important information about Easywebcare is given in Table 6.

4.1. Performance Report. The GTmetrix range includes how fast your page works (upload, interaction, and visual stability) and how well it is designed to work. This range best reflects your web page knowledge as it takes into account both your previous layout and the actual functionality acquired by Google using a new concept in 2020 called "Web Vitals," which focuses on a small set of key metrics to test your page's feel. Most of the time, with book reviews to test page performance, this small set represents the most influential metrics you can focus on, with the aim of simplifying the world of web functionality. Each metric represents an important aspect of the page experience, namely, upload, communication, and visibility intensity. Web vitals show the largest contentful paint (LCP) 2.3 s, first input delay (FID) 0.2 s, total blocking time (TBT) 0.001 s, and cumulative layout shift (CLS) 0.1 s as shown in Figure 6.
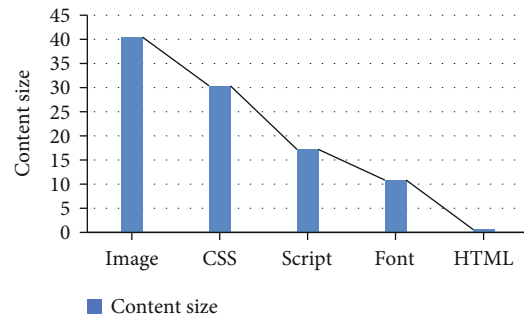

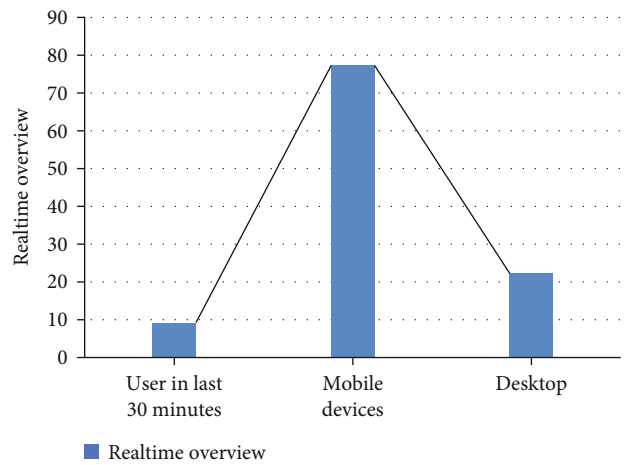FIGURE 11: Content size by content type.
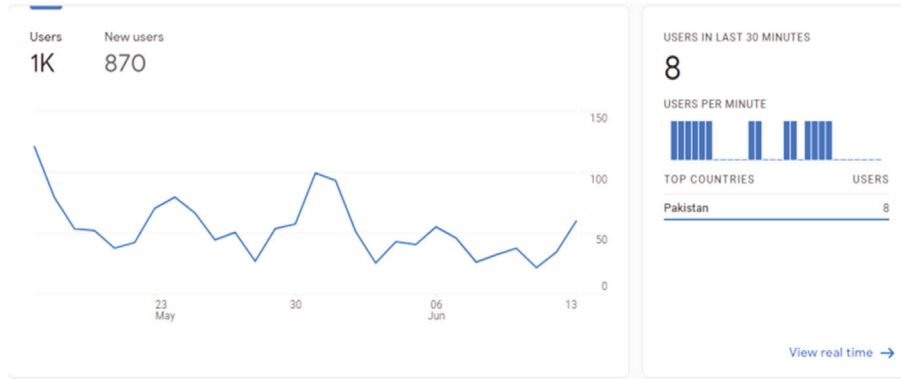

FIGURE 12: Real-time active user on the website.

FIGURE 13: Real-time active user on the website.

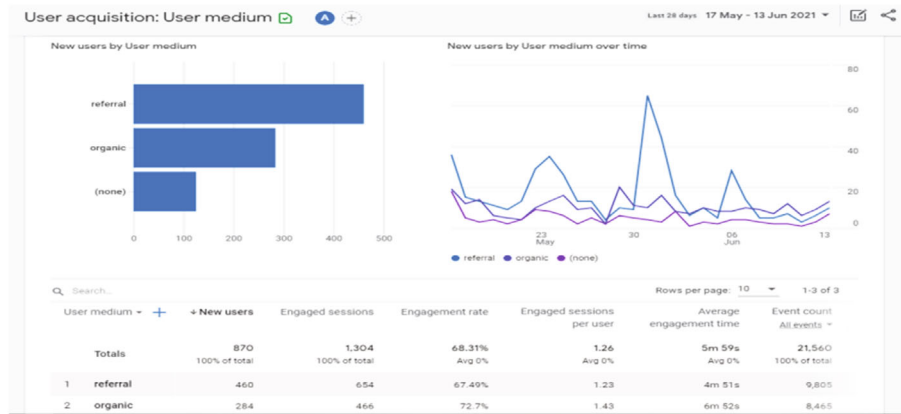
FIGURE 14: Real-time active user on the website.

4.2. Speed Test. Speed testing measures the maximum speed of your current connection—how fast our device can download and download data—by accessing nearby test servers. The test mimics your online activity in a controlled setting by downloading sample files and recording speed. The full time to load the website is 10.6 s in Figure 5, which includes photos, videos, fonts, and JS texts. The total page size is 6.07 MB. It contains full-page size applications and other content. Speed test contains fully loaded time 10.6 s and total page size 6.07 MB which contains image 2.47 MB, CSS 1.85 MB, JS 1.05 MB, and font 667 KB, and total page request 82 contains image 7.3%, CSS 42.7%, JS 32.9%, and font 14.6% as shown in Figure 7.

4.3. Performance Metrics. First contentful paint (FCP) is a performance metric that measures how quickly visitors can view the actual content (i.e., text, photos, and video) on your page. FCP, which matches the loading speed of your page, is one of the metrics we have already followed in our legacy reports. Speed index (SI) is a performance metrics that measure how fast your page is completed over a pen. SI depends on the size of the browser's viewing area and differs from other metrics such as the first contentful paint (FCP) or largest contentful paint (LCP) because it is not a landmark in your page's timeline. Interaction time (TTI) is a perfor-

mance metric that measures page load response and helps identify situations where a page seems to be merging but is not actually. TTI estimates how long it takes for a page to fully function, which measures the time between first contentful paint (FCP) and long-term storage activity on a large thread and represents the point at which the browser is able to reliably respond to user input. In simple terms, a quick TTI helps ensure the page is usable. Performance metrics generated using lighthouse performance data contain first content paint 6.6 s, speed index 8.4 s, largest contentful paint 9.3 s, time to interactive 7.3 s, total blocking time 0 ms, and cumulative layout shift 0 as shown in Figure 8.

4.4. Browser Timings. These timings are milestones reported by the browser. It contains redirect duration 0 ms, connection duration 1.6 s, backend duration 771 ms, time to first byte (TTFB) 2.3 s, first paint 6.6 s, DOM interaction time 7.3 s, DOM content loaded time 7.3 s, on load time 10.5 s, and fully loaded time 10.6 s, as shown in Figure 9.

4.5. Waterfall Chart. Because waterfall charts visualize behavioral uploads, you get to see what was loaded in sequence, as well as application details. The time and duration of the application are also indicated, with the bar length representing how long each one has taken to request, download, and/or perform as shown in Figure 10.
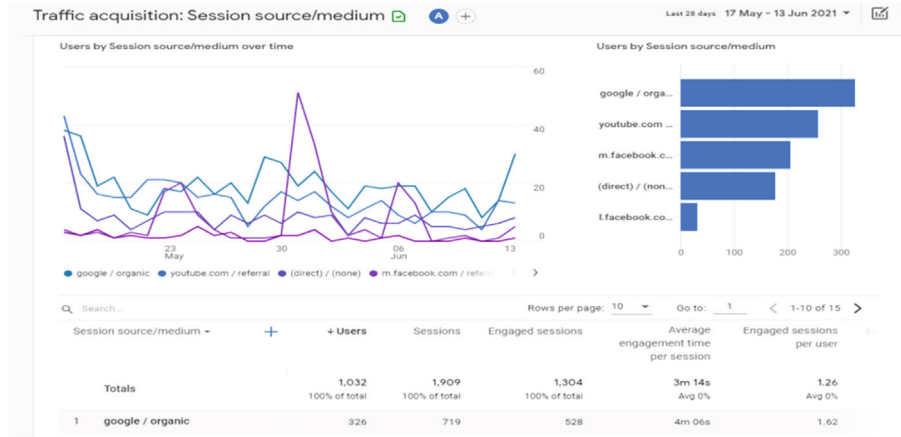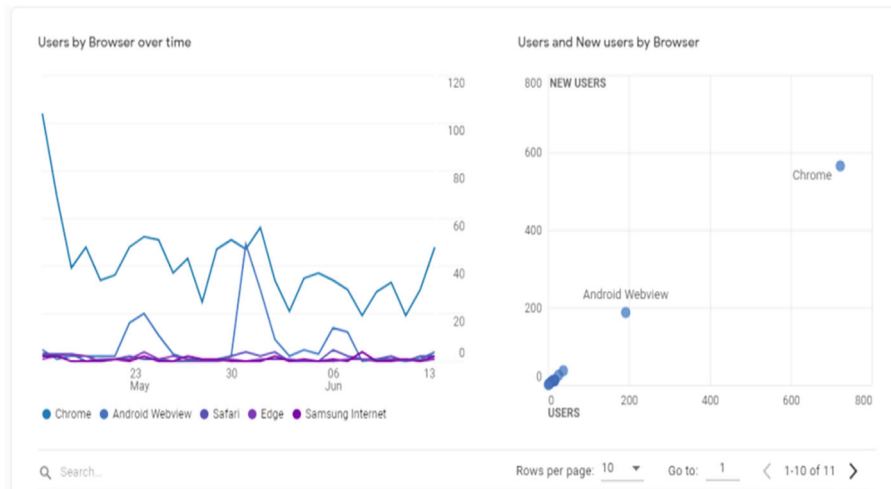
FIGURE 15: Real-time active user on the website.

FIGURE 16: Web browser for accessing our website.

4.6. Content Size by Content Type. Content size by content type contains image 40.49%, CSS 30.42%, script 17.27%, font 10.77%, and HTML 0.76% as shown in Figure 11.

4.7. Real Time. This shows real-time active users on the website in real time. The user in last 30 minutes is 9 from those 77.8% which are mobile users and 22.2% which are desktop users as shown in Figure 12.

4.8. Acquisition Overview. User acquisition overview shows the number of users during the whole month. It contains 870 new users, and per minute, 8 users are from Pakistan and the total number of users from May to June is 1K as shown in Figure 13.

4.9. User Acquisition Medium. Referral users are using some other sites to get to our site, while organic users mean users that directly come to our site as shown in Figure 14.

4.10. Traffic Acquisition: Session Source/Medium. Traffic acquisition: session source/medium shows site traffic

mediums that people used to access our website as shown in Figure 15.

4.11. Web Browser for Accessing Our Website. It shows people are using which browsers to access our website. Statistics here showed that Google Chrome was the most used web browser for accessing our website, as shown in Figure 16.

5. Conclusion

Cognitive disability is a learning disability which is a term that is used when a person has certain limitations in the workplace and the development of skills such as communication, self-help, and social skills. These limitations have caused the child to learn and develop more slowly than the average child. Assistive technology can reduce the impact of these disorders and improve your quality of life. There are a number of technologies that are currently being investigated. The success of these new technologies requires an understanding of the barriers that prevent the use of modern technologies, including people with mental and cognitive

disabilities in the design process, as well as the technologies that enable the transition of the company from the market. There are a number of factors, such as lack of economic access to the site and the limited availability of the website for people with mental and cognitive disabilities which have lower Internet usage rates. People with mental and cognitive disabilities are among the poorest in the country and are having problems connecting to the Internet. There are different types of PWDs, with different types of disabilities, from a personal experience of the use of the website. In the case of cognitive impairment, we will have to make it more naturalistic for any problems during our tests. To solve these problems, the site, also referred to as Easywebcare, was created. This study evaluates these issues with the help of methods, and the results show that the majority of websites have been designed to comply with standards of accessibility for individuals with disabilities. In the light of these results, further recommendations are being made for improving the accessibility of websites for PWDs.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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