

# People with Special Needs and the Accessibility of Websites of Educational Institutions: Using the Brazilian System to Point to a Current and Problematic Global Issue

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## Abstract

The virtual world of the internet is increasingly present in society. However the accessibility to this world is not fully guaranteed in an inclusive way for those with special needs. In this study, we investigated the presence of accessibility tools considered of less complexity (increase of text font, navigation shortcuts and high contrast) in homepages of 97 Brazilian Educational Institutions including 38 Federal Institutes of Vocational Education, Science and Technology which were specialized in technical formation and 59 Federal Universities. The results of the Federal Institutes revealed that 12 of the 38 sites had none of the tools evaluated, which might hinder or prevent the access of those with special needs. The analysis also revealed the increase of text font as the tool with the highest incidence in the evaluated sites (26 of 38 sites). The universities analysis showed that 41 of the 59 sites evaluated did not have any of the tools analyzed and only the Federal University of Ceará showed all evaluated tools. According to our overall analysis, this is a global issue in several educational institutions who ignore the right of the people with special needs to access this educational virtual world. This lack of access may hugely compromise this people's life in a longer perspective so they should be remembered by those who have the control of these virtual environments. People with special needs may have a full and complete life, including in the virtual

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**world of internet, if conditions of accessibility are offered and this is mandatory for educational institutions like those evaluated in this study.**

## Keywords

**Accessibility, Internet, People with Special Needs, Educational Institutions**

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## 1. Introduction

According to [Ferreira & Nunes \(2008\)](#), web accessibility refers to the feasibility of using the World Wide Web resources to obtain data, information and/or knowledge regardless the user's limitation or special needs.

Thus, it is important to provide to the websites of Internet several accessibility tools that allow any user, with any individual characteristics, to access the content available online without difficulties and in an independent way.

The current literature comments that the defense of the citizenship and the right of educating people with disabilities is a very recent attitude in our society ([Mazzotta, 2011](#)). The adequability of physical spaces and training of teachers and educational professionals has been continuously requested by the global society. However, we should not forget that the virtual world as accessibility is not just a physical perspective, but also includes communication, transportation, teaching resources and technology, among others ([Guerreiro, 2012](#)). Thus, not only the academic or professional environments should be adapted to the students and others with special needs, but also the virtual world should be prepared to attend them.

For that matter, the websites of educational institutions should pay even more attention to these students as the access to these sites represents not only the chance of getting a higher education but also the perspective of getting a better professional life. However, this depends mainly on the presence of different Internet tools that adapt this environment for this group.

[Conforto & Santarosa \(2002\)](#) discuss that it is necessary to provide to each user all tools, mechanisms and interfaces which enable not only the full access, but also the use of the information provided in the virtual environment. This is important in order to break the model of our current society that sets limits, and excludes groups of intelligent men and women who are from these communities with special needs. Currently, there are different special needs that prevent or hinder the use of the internet world. For example, people with visual problems, such as those with low vision (visual acuity below 30%), require tools and adaptations of low complexity that allow their use and access the information available on the internet pages. Others, such as those with hearing problems (need = sign language) and physical deficiency (need = oral tales) demand more financial investment to adapt the system to them.

The virtual world has been an important environment for diffusing information about federal agencies and institutes, including the educational ones, not only in Brazil but also in other countries. Therefore, in this work we evaluated the presence of accessibility tools considered of less complexity (increase of text font, navigation shortcuts and high contrast) in the 97 homepages of Brazilian Educational Federal Institutions including 38 Institutes of Vocational Education, Science and Technology specialized in technical formation and 59 universities. Our purpose is to discuss the issue of attending the people with special needs in the virtual world of educational institutions, reminding that this group needs this information for getting a better professional and social life even more than other person.

## 2. Methodology

In order to verify the presence of accessibility tools of lesser complexity (increased text font, navigation shortcuts and high contrast) we evaluated 97 Brazilian Educational Institutions, including 38 Federal Institutes of Vocational Education, Science and Technology specialized in technical formation and 59 Federal Universities during March 15<sup>th</sup> and April 15<sup>th</sup>, 2014.

## 3. Results and Discussion

According to some authors, virtual accessibility is the right of accessing information with no communication

barriers, with the possibility of using equipments and appropriate programs, including content and presentations in alternative formats (Acessibilidade Brasil, 2014). Therefore, this should be not restricted to physical access to buildings adapted for this purpose, and should include the free access to the virtual environment with no further help.

In this work, we evaluated the presence of three accessibility tools of low complexity (increase of text font, navigation shortcuts and high contrast) for people with visual needs in 38 Federal Institutes of Technical Education websites that are part of the Brazilian Federal Network of Professional Education, Science and Technology (Table 1). The network consists of 38 institutes differently distributed in the Brazilian regions, including 5 in the Midwest, 11 in the Northeast, 7 in the North, 9 in the Southeast and 06 in the South.

According to our analysis, 12 institutions (31%) have no accessibility tool for people with visual needs, whereas six (15%) presented all three tools evaluated. Three of the six institutes that have these tools are located in the Southeast, while there is no institute in the North or Northeast regions that fulfilled this search completely (Table 1).

In 26 sites (68%) of the 38 analyzed, the tool to increase the text fonts of the sites was found. This is a fundamental tool for those users with visual impairments that was the most prevalent in the search performed. Another important tool for the group with low vision is the high contrast, allowing the change in the site color background, easy to read. Such tool is present in only 11 sites, and in a smaller proportion only 7 of the 38 sites evaluated have the shortcut tool (Table 1).

In this work we also evaluated the presence of these accessibility tools with low complexity for people with visual needs in the websites of 59 Federal Universities of Brazil (Table 2). Among the universities analyzed, 18 are located in the southeast region, 11 in the north, 5 in the Midwest, 14 in the Northeast region and 11 in the south. Among all 59, 40 universities (67%) have no accessibility tool while only one (Universidade Federal do Ceará) present all evaluated tools (increase of text font, navigation shortcuts and high contrast) (Table 2).

Ten University websites (16%) showed two of the accessibility tools analyzed whereas in 7 sites (11%) there was found only one tool (Table 2). As reported in the literature, the challenges on getting a higher education for people with special needs are huge. In the National Policy of Special Education, Brazil (Brasil, 2008) reports that the actions and movements for inclusion, and a global phenomenon that involves political, cultural, social and educational activities, should be triggered to defend the right of all students without discrimination of any kind. The data described in our study show that, at least in terms of accessibility of Brazilian Federal Universities and Institutes websites for people with visual needs is not connected with the Brazilian and global concerns on including this group.

Aiming to check the websites of universities around the world, we visited the sites of some institutions of other countries such as Lund University, Sweden, Universidad Nacional Autonoma de Mexico, Mexico, and the University of Oxford, UK. The websites of these institutions have accessibility tools on your pages following the standards of the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C), the organization that establishes standards for internet. According to Corradi (2001) the Web Accessibility Initiative, is “one of the largest initiatives to promote accessibility on the Internet”. Despite the existence of numerous global initiatives for promoting standards and different standards about digital content in various guides for the development of accessible interface, the comparison of accessibility as a parameter using the three tools of lesser complexity (increasing text font, navigation shortcuts and high contrast) revealed that a lot still has to be done even in the lower level of complexity.

According to Smith (2008), we should provide a support system and related services for people with special needs, which involves different alternatives and strategies, with individual attention. Affordability should not restrict the accessibility that has to be present in the virtual world. The term digital accessibility, according to Corradi (2011), “is understood as a condition of access and use, with autonomy and independence of computer systems, information environments and media, regardless of sensory, motor and linguistic conditions of users”.

When it comes to public educational institutions such as Brazilian Federal universities and Institutes, they should include students with special needs and make available the tools to provide digital accessibility. Every effort should be made to provide access to the information on their websites for all students regardless of their sensory, language and motor conditions (Corradi, 2011). Although important, the digital accessibility is not easily achieved, since there are numerous sensory and motor limitations that need to be compensated by different tools (Ferreira, 2008). However, despite the difficulties, the digital accessibility should be relentlessly pursued by all societies.

**Table 1.** Comparison of the presence of low complexity accessibility tools (increase of text Font, navigation shortcuts and high contrast) for people with special need in 38 websites of Federal Institutes that are part of Brazilian Federal Network of Professional Education, Science and Technology.

| #   | Name of the Brazilian Federal Institute      | Local (Region) | Presence of Tools |                |                |
|-----|--|----------------|-------------------|----------------|----------------|
|     |  |                | Font              | Contrast       | Shortcuts      |
| 1.  | Instituto Federal Roraima                    | North          | <b>Present</b>    | <b>Present</b> | Absent         |
| 2.  | Instituto Federal do Pará                    | North          | <b>Present</b>    | Absent         | Absent         |
| 3.  | Instituto Federal do Amapá                   | North          | <b>Present</b>    | Absent         | Absent         |
| 4.  | Instituto Federal Tocantins                  | North          | <b>Present</b>    | Absent         | Absent         |
| 5.  | Instituto Federal do Acre                    | North          | Absent            | Absent         | Absent         |
| 6.  | Instituto Federal do Amazonas                | North          | Absent            | Absent         | Absent         |
| 7.  | Instituto Federal Rondônia                   | North          | Absent            | Absent         | Absent         |
| 8.  | Instituto Federal Baiano                     | Northeast      | <b>Present</b>    | <b>Present</b> | Absent         |
| 9.  | Instituto Federal do Rio Grande do Norte     | Northeast      | <b>Present</b>    | <b>Present</b> | Absent         |
| 10. | Instituto Federal de Paraíba                 | Northeast      | <b>Present</b>    | Absent         | <b>Present</b> |
| 11. | Instituto Federal Sergipe                    | Northeast      | <b>Present</b>    | Absent         | Absent         |
| 12. | Instituto Federal do Pernambuco              | Northeast      | <b>Present</b>    | Absent         | Absent         |
| 13. | Instituto Federal do Maranhão                | Northeast      | <b>Present</b>    | Absent         | Absent         |
| 14. | Instituto Federal do Sertão Pernambucano     | Northeast      | <b>Present</b>    | Absent         | Absent         |
| 15. | Instituto Federal do Piauí                   | Northeast      | <b>Present</b>    | Absent         | Absent         |
| 16. | Instituto Federal do Ceará                   | Northeast      | <b>Present</b>    | Absent         | Absent         |
| 17. | Instituto Federal de Alagoas                 | Northeast      | Absent            | Absent         | Absent         |
| 18. | Instituto Federal Bahia                      | Northeast      | Absent            | Absent         | Absent         |
| 19. | Instituto Federal do Mato Grosso             | Midwest        | <b>Present</b>    | <b>Present</b> | <b>Present</b> |
| 20. | Instituto Federal do Mato Grosso do Sul      | Midwest        | <b>Present</b>    | Absent         | Absent         |
| 21. | Instituto Federal Distrito Federal           | Midwest        | <b>Present</b>    | Absent         | Absent         |
| 22. | Instituto Federal de Goiás                   | Midwest        | <b>Present</b>    | Absent         | Absent         |
| 23. | Instituto Federal Goiano                     | Midwest        | Absent            | Absent         | Absent         |
| 24. | Instituto Federal Fluminense                 | Southeast      | <b>Present</b>    | <b>Present</b> | <b>Present</b> |
| 25. | Instituto Federal Rio de Janeiro             | Southeast      | <b>Present</b>    | <b>Present</b> | <b>Present</b> |
| 26. | Instituto Federal do Norte de Minas          | Southeast      | <b>Present</b>    | <b>Present</b> | <b>Present</b> |
| 27. | Instituto Federal do Sul de Minas            | Southeast      | <b>Present</b>    | <b>Present</b> | Absent         |
| 28. | Instituto Federal do Sudeste de Minas Gerais | Southeast      | <b>Present</b>    | Absent         | Absent         |
| 29. | Instituto Federal São Paulo                  | Southeast      | <b>Present</b>    | Absent         | Absent         |
| 30. | Instituto Federal de Minas Gerais            | Southeast      | <b>Present</b>    | Absent         | Absent         |
| 31. | Instituto Federal do Espírito Santo          | Southeast      | Absent            | Absent         | Absent         |
| 32. | Instituto Federal do Triângulo Mineiro       | Southeast      | Absent            | Absent         | Absent         |
| 33. | Instituto Federal Rio Grande do Sul          | South          | <b>Present</b>    | <b>Present</b> | <b>Present</b> |
| 34. | Instituto Federal Farroupilha                | South          | <b>Present</b>    | <b>Present</b> | <b>Present</b> |
| 35. | Instituto Federal Sul-Rio-grandense          | South          | <b>Present</b>    | <b>Present</b> | Absent         |
| 36. | Instituto Federal Paraná                     | South          | Absent            | Absent         | Absent         |
| 37. | Instituto Federal Santa Catarina             | South          | Absent            | Absent         | Absent         |
| 38. | Instituto Federal Catarinense                | South          | Absent            | Absent         | Absent         |

**Table 2.** Comparison of the presence of low complexity accessibility tools (increase of text font, navigation shortcuts and high contrast) for people with special need in websites of 59 Brazilian Federal Universities.

| #   | Name of the Brazilian Federal University      | Local (Region) | Presence of Tools |                |                |
|-----|---|----------------|-------------------|----------------|----------------|
|     |   |                | Font              | Contrast       | Shortcuts      |
| 1.  | Universidade Federal de Roraima               | North          | <b>Present</b>    | <b>Present</b> | Absent         |
| 2.  | Universidade Federal do Acre                  | North          | Absent            | Absent         | Absent         |
| 3.  | Universidade Federal do Amapá                 | North          | Absent            | Absent         | Absent         |
| 4.  | Universidade Federal do Amazonas              | North          | Absent            | Absent         | Absent         |
| 5.  | Universidade Federal do Pará                  | North          | Absent            | Absent         | Absent         |
| 6.  | Universidade Federal do Tocantins             | North          | Absent            | Absent         | Absent         |
| 7.  | Universidade Federal de Rondônia              | North          | Absent            | Absent         | Absent         |
| 8.  | Universidade Federal Rural da Amazônia        | North          | Absent            | Absent         | Absent         |
| 9.  | Universidade Federal do Sul e Sudeste do Pará | North          | Absent            | Absent         | Absent         |
| 10. | Universidade Federal do Oeste do Pará         | North          | Absent            | Absent         | Absent         |
| 11. | Universidade Federal Rural da Amazônia        | North          | Absent            | Absent         | Absent         |
| 12. | Universidade Federal de Ceará                 | Northeast      | <b>Present</b>    | <b>Present</b> | <b>Present</b> |
| 13. | Universidade Federal de Maranhão              | Northeast      | <b>Present</b>    | <b>Present</b> | Absent         |
| 14. | Universidade Federal da Bahia                 | Northeast      | <b>Present</b>    | <b>Present</b> | Absent         |
| 15. | Universidade Federal de Paraíba               | Northeast      | <b>Present</b>    | <b>Present</b> | Absent         |
| 16. | Universidade Federal de Alagoas               | Northeast      | <b>Present</b>    | Absent         | <b>Present</b> |
| 17. | Universidade Federal de Sergipe               | Northeast      | Absent            | <b>Present</b> | Absent         |
| 18. | Universidade Federal de Campina Grande        | Northeast      | Absent            | Absent         | Absent         |
| 19. | Universidade Federal de Pernambuco            | Northeast      | Absent            | Absent         | Absent         |
| 20. | Universidade Federal de Piauí                 | Northeast      | Absent            | Absent         | Absent         |
| 21. | Universidade Federal de Rio Grande do Norte   | Northeast      | Absent            | Absent         | Absent         |
| 22. | Universidade Federal do Sul da Bahia          | Northeast      | Absent            | Absent         | Absent         |
| 23. | Universidade Federal do Vale do São Francisco | Northeast      | Absent            | Absent         | Absent         |
| 24. | Universidade Federal do Oeste da Bahia        | Northeast      | Absent            | Absent         | Absent         |
| 25. | Universidade Federal Rural de Pernambuco      | Northeast      | Absent            | Absent         | Absent         |
| 26. | Universidade Federal de Goiás                 | Midwest        | <b>Present</b>    | <b>Present</b> | Absent         |
| 27. | Universidade Federal de Mato Grosso           | Midwest        | <b>Present</b>    | <b>Present</b> | Absent         |
| 28. | Universidade Federal de Brasília              | Midwest        | Absent            | Absent         | Absent         |
| 29. | Universidade Federal da Grande Dourados       | Midwest        | Absent            | Absent         | Absent         |
| 30. | Universidade Federal de Mato Grosso do Sul    | Midwest        | Absent            | Absent         | Absent         |
| 31. | Universidade Federal de Viçosa                | Southeast      | <b>Present</b>    | <b>Present</b> | Absent         |
| 32. | Universidade Federal de Itajubá               | Southeast      | <b>Present</b>    | Absent         | Absent         |
| 33. | Universidade Federal de São João Del-Rei      | Southeast      | <b>Present</b>    | Absent         | Absent         |
| 34. | Universidade Federal Rural do Rio de Janeiro  | Southeast      | <b>Present</b>    | Absent         | Absent         |
| 35. | Universidade Federal de Minas Gerais          | Southeast      | Absent            | Absent         | Absent         |
| 36. | Universidade Federal de São Paulo             | Southeast      | Absent            | Absent         | Absent         |
| 37. | Universidade Federal de Uberlândia            | Southeast      | Absent            | Absent         | Absent         |

**Continued**

|     |   |           |                |                |        |
|-----|---|-----------|----------------|----------------|--------|
| 38. | Universidade Federal do Espírito Santo                    | Southeast | Absent         | Absent         | Absent |
| 39. | Universidade Federal do Rio de Janeiro                    | Southeast | Absent         | Absent         | Absent |
| 40. | Universidade Federal de Alfenas                           | Southeast | Absent         | Absent         | Absent |
| 41. | Universidade Federal de Juiz de Fora                      | Southeast | Absent         | Absent         | Absent |
| 42. | Universidade Federal de Larvas                            | Southeast | Absent         | Absent         | Absent |
| 43. | Universidade Federal de Ouro Preto                        | Southeast | Absent         | Absent         | Absent |
| 44. | Universidade Federal de São Carlos                        | Southeast | Absent         | Absent         | Absent |
| 45. | Universidade Federal do Estado do Rio de Janeiro          | Southeast | Absent         | Absent         | Absent |
| 46. | Universidade Federal do Triângulo Mineiro                 | Southeast | Absent         | Absent         | Absent |
| 47. | Universidade Federal dos Vales do Jequitinhonha e Mucuri  | Southeast | Absent         | Absent         | Absent |
| 48. | Universidade Federal Fluminense                           | Southeast | Absent         | Absent         | Absent |
| 49. | Universidade Federal de Pelotas                           | South     | <b>Present</b> | <b>Present</b> | Absent |
| 50. | Universidade Federal de Ciências da Saúde de Porto Alegre | South     | <b>Present</b> | <b>Present</b> | Absent |
| 51. | Universidade Federal de Santa Maria                       | South     | <b>Present</b> | Absent         | Absent |
| 52. | Universidade Federal do Rio Grande do Sul                 | South     | <b>Present</b> | Absent         | Absent |
| 53. | Universidade Federal da Integração Latino-Americana       | South     | <b>Present</b> | Absent         | Absent |
| 54. | Universidade Federal Santa Catarina                       | South     | Absent         | Absent         | Absent |
| 55. | Universidade Federal do Paraná                            | South     | Absent         | Absent         | Absent |
| 56. | Universidade Federal do Rio Grande                        | South     | Absent         | Absent         | Absent |
| 57. | Universidade Federal da Fronteira Sul                     | South     | Absent         | Absent         | Absent |
| 58. | Universidade Federal do Pampa                             | South     | Absent         | Absent         | Absent |
| 59. | Universidade Tecnológica Federal do Paraná                | South     | Absent         | Absent         | Absent |

#### 4. Final Remarks

Our data revealed that most of the Brazilian Federal Technical Institutes analyzed in this study presented at least one accessibility tool in their websites (68%), disclosing their concern and awareness of the importance of such mechanisms to people with visual needs. In contrast, this consciousness was not observed on Federal Universities homepages, where only one website presented all the tools of low complexity and only 30% had some of the tools analyzed.

Even among the sites of the Federal Institutes, there is still 12 (31%) that do not offer tools on their websites and/or alternatives of access. Among the sites of the 41 Federal Universities, 70% of them do not offer such tools and/or mechanisms that facilitate, or even make it possible, the navigation of individuals with special needs.

Considering the popularization of the Internet, it is essential that schools, universities and educational institutions allow everyone to find the information about how they can get an education degree also through their websites. and portals should not be restrictive environments, needing to be more similar to their physical places (buildings and constructions) that are in general physically adapted (Smith, 2008).

Finally, we suggest more studies that involve people with special needs (e.g. Blind or with low vision, deaf, hearing and/or physically impaired) to analyze the World Wide Web, including websites of educational institutions, to help on pointing their vulnerabilities and inadequacy, helping in improving the accessibility for them.

#### References

- Acessibilidade Brasil (2014). O que é acessibilidade.  
[http://www.acessibilidadebrasil.org.br/versao\\_anterior/index.php?itemid=45](http://www.acessibilidadebrasil.org.br/versao_anterior/index.php?itemid=45)

- Brasil (2008). *Política nacional de Educação Especial na perspectiva da Educação Inclusiva*. Brasília: MEC/SEESP. <http://portal.mec.gov.br/seesp/arquivos/pdf/politica.pdf>
- Conforto, D., & Santarosa, L. M. C. (2002). Acessibilidade à Web: Internet para Todos. *Revista de Informática na Educação: Teoria, Prática—PGIE/UFRGS*, 5, 87-102.
- Corradi, J. A. M. (2011). *Acessibilidade em ambientes informacionais digitais: Uma questão de diferença*. São Paulo: Editora Unesp.
- Ferreira, L, S. B., & Nunes, R. R. (2008). *E-usuabilidade*. Rio de Janeiro: LTC.
- Guerreiro, E. M. B. R. (2012). A acessibilidade e a educação: Um direito constitucional como base para um direito social da pessoa com deficiência. *Revista Educação Especial, Universidade Federal de Santa Maria*, 25, 217-232. <http://dx.doi.org/10.5902/4415>
- Mazzotta, M. J. S. (2011). *Educação especial no Brasil: Histórias e políticas públicas* (6th ed.). São Paulo: Cortez.
- Smith, D. D. (2008). *Introdução à educação especial: Ensinar em tempos de inclusão* (5th ed.). Porto Alegre: Artmed.