

## CHALLENGES FACING THE TRANSFER OF ISLAMIC KNOWLEDGE TO VIUs VIA E-LEARNING WEBSITES IN MALAYSIA ACCORDING TO SERVICE AND KNOWLEDGE PROVIDERS

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### Abstract

*This paper has attempted to address the problem of lack of effective Islamic knowledge transfer (EiKT) to VIUs through e-Learning websites by determining the challenges being experienced by visually impaired users (VIUs) in the use of e-Learning websites according to the service and knowledge providers. This paper is exploratory and makes use of thematic analysis to analyse the obtained qualitative data from interviews. The participants of the interview include the 14 visually impaired users, 14 knowledge provider (KPs) and 13 service providers (SPs) in 15 Malaysian institutions. Some of the challenges include quality of knowledge contents, accessibility issues and lack of ICT skills by the VIUs. The challenges being faced contribute to the lack of effective transfer of Islamic knowledge via Malaysian e-learning websites to VIUs.*

**Keywords:** *Visually Impaired Users challenges on e-Learning websites, Islamic Knowledge Transfer, Visually Impaired Users.*

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### Introduction

Visually Impaired Users (VIUs) are the internet users with visual disabilities such as differentiating between dark and light, tunnel vision, full blindness, have low vision, or who have colour blindness. The Internet and assistive technology can help people with disabilities maximize their potential and achieve personal, professional, and educational objectives (Brady et al, 2013; Hersh, & Johnson, 2010). Basically, these technologies allow them to have access to information, work independently, execute errands such as shopping, participate in education and training, and communicate and socialize with others. There are 2817 people with visual impairment in Malaysia as at the year 2008 (Ismail & Zaman, 2010) which shows that it is important to ensure both VIUs and non-VIUs should have the same opportunities to education. Any e-Learning websites to be used by the VIUs should consider their limitations and design an accessible user interface which can be used by them. There are a lot of reasons that can cause this, for instance, it can be as a result of their lack of ability to

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see the content on the e-Learning website or because assistive technology is needed. There is also a lack of awareness as many parents believe that the traditional learning mode is better (Ali, 2004).

The purpose of this paper is to present the challenges facing the use of the e-Learning websites to transfer knowledge to VIUs according to the knowledge providers (KPs) and the service providers (SPs) in Malaysia. The next section briefly reviews the relevant literature; the subsequent section discusses about the methodology, followed by the result and discussion sections. Finally, the conclusion of the paper is presented.

### **Use of ICT by the Visually Impaired Users**

The role of ICTs in providing people with vision impairments with access to printed and electronic information has been largely documented in the literature (Hersh & Johnson, 2008; Presley & D'Andrea, 2009; Smith & Kelly, 2014). The varied range of available ICT represents an alternative to traditional forms of information access. New technologies have made it easier for this group of students to access texts from newspapers, journals, magazines and books and also graphical information such as pictures and mathematical equations through technologies that enhance vision, touch and hearing (Presley & D'Andrea, 2009). For example, closed-circuit television systems (CCTV), which use a video camera connected to a monitor, are being used to enlarge the size of text and images from books and other course-related material and also to adjust their colour and background. By using assistive technologies, students with vision impairments depend less on the help of other people to read course material for them. ICTs have also supported access to information available electronically and/or online.

Personal computers, laptops and the Internet are also regarded as important in terms of facilitating information searching and access for learners with vision impairments especially in cases when the amount of information available online is vast (Ritchie & Blanck, 2003; Hersh & Johnson, 2008). Early studies about the role of the Internet from the perspective of people with vision impairments demonstrate that the online medium increases access to information (Williamson et al., 2001). This trend is confirmed by recent research which shows that people with vision impairments, especially the younger generations, have embraced the Internet as the main means to access information and that they also consider themselves as competent users (van der Geest, van der Meij, & Van Puffelen, 2014). E-learning can promote the inclusion of learners with various disabilities (Di Iorio, et. al, 2006). Even though there are many advantages to making use of e-Learning by the VIUs, there is still existing problem with the use of this tool as the VIUs do not get maximum satisfaction from its use and the kind of content to be accessed. As a result, it is necessary to identify the challenges the knowledge providers and service providers think that the visually impaired users in Malaysia face in the usage of e-Learning websites for obtaining Islamic knowledge.

## Usage of E-learning Websites for the Transfer of Knowledge

According to Retina Australia (2012), vision impairment relates to students who are considered as legally blind, having a visual acuity of 6/60 or less in the better eye, and or a visual field of less than 10 degrees. As there are many causes of blindness, circumstances surrounding each user causes must be understood before the problems they face can be addressed (Permvattana et al, 2013). Some of the tools required by this kind of users are screen magnifiers, speech synthesizers and screen readers but unfortunately, screen reading software being designed particularly translate text into audio which makes it features limited for the VIUs (Asha & Chellappan, 2011; Permvattana et al, 2013). As a result, there is need for the screen readers being created to have the ability to translate correctly in order to make its accessible to its users. The time needed to complete learning assessment and tasks by VIUs is three times more than the time needed by non-visual impaired learners (Craven & Brophy, 2003). Some empirical research studies have been carried out to test websites on their usability based on the content contained in the websites. The purpose of testing these websites is to make sure service providers and knowledge providers contribute reasonable and accessible contents for the VIU's trying to use the e-Learning websites. Solovieva & Bock (2014) defined usability as the combination of factors that impacts the quality of a user's experience when interacting with a website which includes: ease of learning, efficiency of use, memorability, error frequency and severity and subjective satisfaction.

Carter & Markel (2001) stated that only a decade ago, just about 1% website developers took into account accessibility for users with disabilities when designing web pages. A number of empirical studies have been carried out on school websites for accessibility issues. These studies were conducted in order to test accessibility of web pages in postsecondary institutions such as colleges and/or universities and after conducting a longitudinal investigation of higher education websites over a 5-year timeframe, researchers concluded that the websites of postsecondary institutions had a tendency to become increasingly complex and inaccessible over time (Hackett & Parmento, 2005; Solovieva & Bock, 2014). It was likewise discovered that screen reading software had problem with interpretation of internet graphics such as drawings and photographs unless there is provision of text description for them, videos, tables, graphs, PowerPoint presentations and so on. Screen magnifiers had over-magnifying problem and so it's only a small portion that can be seen at a time and there was confusion whenever web page layouts change from one page to another page. Other problems that VIUs face involve the features found in e-Learning tools (e.g. forum, navigation, assignments, videos, real-time chat and so on). Sánchez & Aguayo (2007) cited the VIUs challenges of getting learning materials and e-Learning user interfaces that do not rely upon the use of graphics. There is also slow development in terms of force-feedback and haptic technologies which can help VIUs derive more satisfaction from the use of e-Learning websites. They likewise find it hard to experiment and practice in an e-Learning website due to their vision impairment as e-Learning materials that are visual centered are designed to replace previously experiential learning that was achieved through practical applications (Armstrong, 2009).

Assistive technologies readily available for the visually impaired are braille display devices, screen enlargement software and screen reading software. However, limited assistive technologies have been designed to translate graphical images (Armstrong, 2009). Since the needs of the VIUs are different from that of the normal users, teachers or knowledge

providers sometimes find it hard to understand their needs and the learning barriers these kind of learners face. Enthusiasts such as Strobel, Fossa, Arthanat and Brace (2006) predict that low vision and blind people are among those who will continue benefiting from the development of more accessible applications such as Braille display equipment. Research has also looked at the implications of ICTs for people with vision impairments with regard to diverse aspects of their everyday lives. The development of handy technological products based on sound interfaces or audio guiding has also been receiving some attention (Velleman et al, 2004; Pacheco, 2016).

### **Methodology**

This study involves the use of a semi-structured interview in which participants were asked questions and they provided answers based on their knowledge and expertise. Respondents that partook in this study were from Malaysian organizations which are: Malaysian Association for Blind (MAB), Society of the Blind in Malaysia (SBM), Persatuan Orang Cacat Penglihatan Islam Malaysia (PERTIS), Setapak Blindness Special Education Secondary School (SMPK), Ministry of Education (MOE), Jabatan Kemajuan Islam Malaysia (JAKIM), Universiti Kebangsaan Malaysia (UKM), International Islamic University Malaysia (IIUM), Universiti of Malaya and Teachers Training Institute for the Blind. The SPs refers to the organization or companies that provide and manage the e-Learning websites through which Islamic knowledge (such as Hadith, Tawhid, Islamic economy and finance) is learned and transferred to users (VIUs). The KPs include the lecturers and teachers that teach users and impact knowledge to them. When the question was asked to 14 VIUs, 13 SPs and 14 KPs participants using the semi-structured interview in order to find the challenges facing the transfer of Islamic knowledge to the VIUs via e-Learning websites, the challenges mentioned by the service providers and the knowledge providers are stated in the following sections.

### **Result and Discussion**

#### **Challenges facing the transfer of Islamic knowledge to VIUs via e-Learning websites according to SPs**

One of the challenges encountered in the use of e-Learning websites to learning Islamic knowledge in Malaysia for the VIUs is the accessibility issue. This is because the assistive technologies used by the VIUs cannot access the needed information on the e-Learning websites and as a result, some of them stop trying to make use of e-Learning websites. Another problem identified is the reliability of Islamic knowledge content provided on the e-Learning websites as some of the respondents stated that users do not make use of websites which they do not know the provider of the knowledge content in order for them not to be lead in the wrong path due to wrong knowledge content. Accuracy of knowledge content was also mentioned as respondents were concerned with getting the right Islamic knowledge content which is based on Islamic principles and obtained from correct sources. There is a very limited number of e-Learning websites in Malaysia which are focused on the transfer of Islamic knowledge to users as majority of the current e-Learning websites are mainstream. Lack of infrastructure such as software development also affects the development of websites that can be easily accessible for the VIUs.

### **Challenges facing the transfer of Islamic knowledge to VIUs via e-Learning websites according to KPs**

The challenges facing the service providers of e-Learning websites include the development of e-content needed by users, problems being faced by instructors and users of the e-Learning websites and the governance of e-Learning (Embi, 2011). Azhari & Ming (2015) likewise reported in his findings that the inadequate support from the top management, lack of incentives and motivation as challenges that face successful e-Learning implementation. Lack of ICT skills hinders the use of e-Learning websites by users for obtaining Islamic knowledge as many people do not have training in its usage. Also, some Islamic knowledge e-Learning websites currently do not follow the World Wide Web consortium (W3C) guidelines for website design and as a result the websites are not user friendly or easily accessible for the VIUs through their assistive technologies. The update of knowledge content is another issue that affects e-Learning websites for Islamic knowledge as users need more regularly updated content to contents such as more Tafsirs, Hadiths, Fiqh with accurate and correct references and citations.

Even though there are various websites being used to search and acquire Islamic knowledge, there is no specific Islamic knowledge which is designed to cater for the needs of the VIUs alone and as a result; all websites are designed to provide for the needs of all different kinds of users (VIUs, Non-VIUs and the hearing impaired) together by developing websites according to the W3C standard. Due to the challenges discussed above, there is need to identify the factors that affect the transfer of Islamic knowledge through e-Learning websites in order to assist the policy makers, instructors service providers in identifying the barriers being faced by the VIUs during the use of e-Learning websites.

Recent research suggests that there are a lot of challenges being faced by VIUs as regard usability of assistive technologies and e-Learning tools accessibility (Kharade & Peese, 2012). Some work that has been done implied that the utilization of screen reading software require a ton of tolerance and exertion yet it is still more valuable for accessing e-Learning tools than the screen magnifying software that was observed to be hard and undependable to utilize (Kharade and Peese, 2012). There are various challenges that Internet users who are visually impaired experience when surfing the Web, including cyber security concerns and accessibility issues (Domingo, 2012; Olalere & Lazar, 2011; Vigo & Brajnik, 2011). Even though a great number of preventative measures have been taken to make technologies, and in particular the Internet, more accessible, users with visual impairments still may have safety concerns when navigating the Internet. However, findings from previous studies suggest that people with visual impairments tend to use computers and the Internet at rates below the average for the general population, indicating that a major digital divide still exists for users who are visually impaired (Kelly & Smith, 2008).

Lazar et al. (2007) listed the top five causes of frustration faced by users when using screen readers: (a) confusing layout; (b) technical conflicts between the screen readers and applications; (c) poorly designed forms; (d) no alternate text for images; and (e) inaccessibility to PDF files. Most screen readers have other limitations such as text-based presentation, linear access to information, inaccessibility of visual objects, loss of contexts, and repetition of reading (Chandrashekar, 2010). In addition, realization of the content structure of a Web page is extremely hard for a person who is visually impaired. For example, identifying specific information inside a table is one of the most difficult tasks for

someone visually impaired (Gunderson & Mendelson, 1997; Murphy, Kuber, McAllister, Strain, & Yu, 2008). Inan et al (2016) identified other challenges facing the VIUs in the use of internet to perform various functions such as surfing, checking e-mails, learning online and so on. These challenges include misleading links, automatic web page refreshing, inaccessible flash content, security issues, confusing page layouts and unwanted popups among others. The navigation structure and website organization were the commonly reported difficulties due to the lack of accessible design and the overwhelming amount of information presented on the web pages (Lazar et al., 2007). Such difficulties force individuals with visual impairments to spend an excessive amount of time to individually complete their intended tasks or to rely on other people for acquiring information or completing tasks. Webpages not meeting accessibility guidelines along with the difficulties related to security (e.g., unwanted pop-ups and misleading links) could easily result in user frustration (Lazar et al., 2007). One other challenge is the lack of accessible e-Learning education for VIUs as e-Learning websites that are accessible for VI learners are limited. Assistive technology device are hardware and software designed or can be used to support the needs of exceptional students' ranges from low-technology to high-technology (Alias, et al., 2013).

## Conclusion

Based on the findings reported, the challenges which are facing the VIUs in the use of e-Learning websites for learning Islamic knowledge according to SPs and KPs include accessibility problems, navigation, usability, content quality, knowledge accuracy and lack of ICT skills. The paper concludes that the knowledge providers and service providers can find solution to the challenges facing the use of e-Learning websites for learning Islamic knowledge by the VIUs. If these challenges are not solved opportunely, the majority of the VIUs may not be encouraged to make use of e-Learning websites for learning Islamic knowledge.

## References

- Ali, A. (2004). Issues & challenges in implementing e-learning in Malaysia. Retrieved July 18, 2008.
- Alias, R., Alias, N. A., Ibrahim, A. B., & Jalaluddin, J. (2013). Proposed technology solutions for Special Educational Needs (SEN) learners: Towards inclusive education in Malaysian universities. *International Journal of Information and Education Technology*, 3(2), 206.
- Armstrong, J. (2009). OFDM for optical communications. *Journal of lightwave technology*, 27(3), 189-204.
- Asha, S., & Chellappan, C. (2011). Voice Activated E-Learning System for the Visually Impaired. *International Journal of Computer Applications*, 14(7), 975-8887.
- Azhari, F. A., & Ming, L. C. (2015). Review of e-learning Practice at the Tertiary Education level in Malaysia. *Indian Journal Of Pharmaceutical Education And Research*, 49(4), 248-257.

- Brady, E., Morris, M. R., Zhong, Y., White, S., & Bigham, J. P. (2013, April). Visual challenges in the everyday lives of blind people. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 2117-2126). ACM.
- Carter, J., & Markel, M. (2001). Web accessibility for people with disabilities: an introduction for web developers. *IEEE transactions on professional communication*, 44(4), 225-233.
- Chandrashekar, S. (2010). Is hearing believing? *Perception of online information credibility by screen reader users who are blind or visually impaired* (Doctoral dissertation). University of Toronto.
- Craven, J., & Brophy, P. (2003). *Non-visual Access to the Digital Library: The Use of the Digital Library Interfaces by Blind and Visually Impaired People*. Manchester Metropolitan University, Centre for Research in Library and Information Management.
- Di Iorio, A., Feliziani, A. A., Mirri, S., Salomoni, P., & Vitali, F. (2006). Automatically producing accessible learning objects. *Educational Technology & Society*, 9(4), 3-16.
- Domingo, M. C. (2012). An overview of the Internet of Things for people with disabilities. *Journal of Network and Computer Applications*, 35(2), 584-596.
- Embi, M. A. (2011). E-learning in Malaysian higher education institutions: Status, trends, & challenges. Kuala Lumpur: Ministry of Higher Education Malaysia.
- Gunderson, J., & Mendelson, R. (1997, June). Usability of world wide web browsers by persons with visual impairments. In *Proceedings of the RESNA Annual Conference* (pp. 330-332).
- Hackett, S., & Parmanto, B. (2005). A longitudinal evaluation of accessibility: Higher education websites. *Internet Research*, 15(3), 281-294.
- Helal, A., Moore, S., & Ramachandran, B. (2001). Drishti: An integrated navigation system for visually impaired and disabled. *Fifth International Symposium on Wearable Computers*.
- Hersh, M. A., & Johnson, M. A. (2008). On modelling assistive technology systems—Part I: Modelling framework. *Technology and Disability*, 20(3), 193-215.
- Hersh, M. A., & Johnson, M. A. (2010). A robotic guide for blind people. Part 1. A multi-national survey of the attitudes, requirements and preferences of potential end-users. *Applied Bionics and Biomechanics*, 7(4), 277-288.
- Inan, F. A., Namin, A. S., Pogrund, R. L., & Jones, K. S. (2016). Internet Use and Cybersecurity Concerns of Individuals with Visual Impairments. *Journal of Educational Technology & Society*, 19(1).
- Ismail, N., & Zaman, H. B. (2010). Accessibility: a crucial ingredient in developing speech browser to facilitate the visually impaired in virtual learning environment. In *Global Learn Asia Pacific* (Vol. 2010, No. 1, pp. 490-494).
- Kaneko, T., Fujiyoshi, M., Oouchi, S., Teshima, Y., Ikegami, Y., Watanabe, Y., & Yamazawa, K. (2010). Comprehending and making drawings of 3D objects by visually impaired people:

- Research on drawings of geometric shapes by various methods of projection In K. Miesenberger, J. Klaus, W. Zagler & A. Karshmer (Eds.), *Computers helping people with special needs* (pp. 548-555). Heidelberg: Springer.
- Kelly, S. M., & Smith, T. J. (2008). The digital social interactions of students with visual impairments: Findings from two national surveys. *Journal of Visual Impairment & Blindness*, 102(9), 528.
- Kharade, K., & Peese, H. (2012). Learning by E-Learning for Visually Impaired Students: opportunities or again marginalisation?. *E-Learning and Digital Media*, 9(4), 439-448.
- Kruse, D., Krueger, A., & Drastal, S. (1996). Computer use, computer training, and employment: Outcomes among people with spinal cord injuries. *Spine*, 21(7), 891-896.
- Lazar, J., Olalere, A., & Wentz, B. (2012). Investigating the accessibility and usability of job application web sites for blind users. *Journal of Usability Studies*, 7(2), 68-87.
- Lazar, J., Allen, A., Kleinman, J., & Malarkey, C. (2007). What frustrates screen reader users on the web: A study of 100 blind users. *International Journal of human-computer interaction*, 22(3), 247-269.
- Lowerison, G., Sclater, J., Schmid, R. F., & Abrami, P. C. (2006). Student perceived effectiveness of computer technology use in post-secondary classrooms. *Computers & Education*, 47(4), 465-489.
- Manduchi, R., & Kurniawan, S. (Eds.) (2012). *Assistive technology for blindness and low vision*. Boca Raton, Florida: CRC Press.
- Pacheco, E. (2016). Vision impairment and the transition to university education: The role of ICTs.
- Permvattana, R., Armstrong, H., & Murray, I. (2013). E-learning for the vision impaired: a holistic perspective. *International Journal of Cyber Society and Education*, 6(1), 15.
- Presley, I., & D'Andrea, F. M. (2009). *Assistive technology for students who are blind or visually impaired: A guide to assessment*. American Foundation for the Blind.
- Ritchie, H., & Blanck, P. (2003). The promise of the Internet for disability: a study of on-line services and web site accessibility at Centers for Independent Living. *Behavioral sciences & the law*, 21(1), 5-26.
- Sánchez, J., & Aguayo, F. (2007). Mobile messenger for the blind. In *Universal Access in Ambient Intelligence Environments* (pp. 369-385). Springer Berlin Heidelberg.
- Solovieva, T. I., & Bock, J. M. (2014). Monitoring for Accessibility and University Websites: Meeting the Needs of People with Disabilities. *Journal of Postsecondary Education and Disability*, 27(2), 113-127.
- Strobel, W., Fossa, J., Arthanat, S., & Brace, J. (2006). Technology for access to text and graphics for people with visual impairments and blindness in vocational settings. *Journal of Vocational Rehabilitation*, 24(2), 87-95.



- Van der Geest, T., van der Meij, H., & Van Puffelen, C. (2014). Self-assessed and actual Internet skills of people with visual impairments. *Universal access in the information society*, 13(2), 161-174.
- Velleman, E., van Tol, R., Huiberts, S., & Verwey, H. (2004). 3d shooting games, multimodal games, sound games and more working examples of the future of games for the blind. In International Conference on Computers for Handicapped Persons (pp. 257-263). Springer Berlin Heidelberg.
- Vigo, M., & Brajnik, G. (2011). Automatic web accessibility metrics: Where we are and where we can go. *Interacting with Computers*, 23(2), 137-155.
- Völkel, T., & Weber, G. (2008). RouteCheckr: Personalized multicriteria routing for mobility impaired pedestrians. *Paper presented at the 10th international ACM SIGACCESS Conference on Computers and accessibility*, Nova Scotia, Canada.
- Williamson, K., Schauder, D., Stockfield, L., Wright, S., & Bow, A. (2001). The role of the internet for people with disabilities: issues of access and equity for public libraries. *The Australian Library Journal*, 50(2), 157-174.
- Wilson, J., Walker, B. N., Lindsay, J., Cambias, C., & Dellaert, F. (2007). Swan: System for wearable audio navigation. *Paper presented at the Wearable Computers, 2007 11th IEEE International Symposium*.  
<http://sonify.psych.gatech.edu/~walkerb/publications/pdfs/2007iswc-wilsonet-al-submitted.pdf>