

“EyeCare and Blindness Literacy”: Need for Defining a New Construct

T Suraweera^{1#}, C Wickramaarachchi¹, A Gamage¹, C Wanniarachchi¹, K Mudalige¹, A Kalpashaka¹, and S Bandara¹

¹ Sri Lanka Institute of Information Technology, Business School, Malabe, Sri Lanka.

#theekshana.s@slit.lk

Abstract: Globally, at least 2.2 billion people experience near or distant vision problems, or blindness. Issues related to at least one billion of them could either have been prevented or have not been addressed. Lack of awareness about eye health, blindness, and the life led by the sightless contribute much to this regrettable situation. Having recognized the knowledge gap in literacy and social research, a comprehensive research study was carried out to characterize a new construct called ‘EyeCare and Blindness Literacy’.

As the first step, this paper establishes the need for characterizing such a new construct. It argues that components of the International Classification of Functioning, Disability and Health (ICF model) of the World Health Organization could be successfully adapted to conceptualize this multidimensional construct.

Characterization of this ‘EyeCare and Blindness Literacy’ construct would help to improve public awareness on the issue. Thereby, the eye health and wellbeing of sighted people in general would be improved. This also could be used to promote social inclusion of this vulnerable community, which would in turn make a substantial contribution towards enhancing the quality of life of people with visual impairment and blindness.

Keywords: Eyecare and health, Literacy research, Visual impairment and blindness, Social inclusion

1. Introduction

This research deals with characterization of a new research construct, branded as ‘EyeCare and Blindness Literacy’ (‘ECB literacy’ in short). The broader underlying intention of defining ECB literacy is to raise public awareness and general understanding about personal eye health, and the life of the people with visual impairment and blindness. Scope of this paper is confined to establishing the need for characterizing ECB literacy construct, which is the first phase of a comprehensive study aimed at defining this construct and developing a valid and reliable instrument to measure it. The ECB literacy basically describes what the members of the public need to be aware of (a) for maintaining a favorable level of personal eye health and vision on one hand, and (b) to be a responsible citizen who show respect to people with visual impairment and blindness and to make them become an important part of the society, on the other.

Awareness and understanding of a particular subject area comes under the broader term “literacy”. The long standing popularly shared meaning of the term ‘literacy’ has been the ability of a person to read and write. Accordingly, in a contemporary sense, people with low literacy skills may not be able to read

written material and make sense of them and could not communicate his or her ideas in writing. However, this basic characterization of the term 'literacy', passed from generation to generation, has now evolved to cover wider perspectives involving in various subject disciplines. As a result, a numerous literacies have been freshly defined. 'Digital literacy', 'ICT literacy', 'Legal literacy', 'Health literacy' and 'Cultural literacy' may be cited as examples. This literature review has identified many literacies.

In this backdrop, it is observed that so far there is no characterization of a literacy focusing on personal eyecare, visual impairment, and social inclusion aspectsof people with blindness. Furthermore, having an awareness about these elements is of vital importance for not only from the point of view of maintaining personal eye heath, but also to maintain healthy relationships with those who are blind. Thus, a clear knowledge gap is observed in the disciplines of information and literacy studies, social sciences, and disability studies.

Significance of investigating into this topic aimed at bridging this knowledge gap by charactering ECB literacy, that would result in raising public awareness is wide ranging. The Word Health Organization (WHO) has estimated that there are 2.2 billion persons with visionvision impairment or blindness. WHO also declares that the problems of at least half of them could be prevented or corrected with proper medical, clinical and/or other interventions (WHO, 2021). Another considerable problem observed, particularly in the developing nations like Sri Lanka, is the poor standard of social inclusion of disabled community in general. United Nation's Sustainability Goals (SDG) and Convention on the Rights of Persons with Disabilities (CRPD) deal with such issues (United Nations, 2015). One proven means of addressing such social problems is boosting public awareness on the

topic in question. This could be addressed through enhancing literacy levels of the public in the respective subject area. It is imperative that the relevant 'literacy' is characterized, specifying what the public needs to be informed of, for designing public awareness programs. A parallel could be drawn with respect to the characterization of Information and Communication Technology (ICT) literacy in the first half of year 2000 (Rockman, 2005). This innovation immensely contributed towards raising public awareness of ICT sector, which was relatively a new subject then. It has also triggered developing several education tools such as 'International Computer Driving License (ICDL)'. This new characterization of ECB literacy construct would pave the way not only towards improving the public awareness about this vital topic area but also open-up many areas of study for new researchers.

In summary, purpose of this paper is to establish the need for characterizing a brand-new concept, called EyeCare and Blindness Literacy. Based on a comprehensive literature review, this paper argues that there is a profound need for charactering this literacy construct. Collating and analyzing definitions of a wide range of literacies and the respective domain attributes, this review concludes the respective gap in knowledge. Furthermore, the importance of raising public awareness and understanding about eye health and the need for improving social inclusion of people with visual impairment and blindness is emphasized in this paper. Finally, the key aspects that need to be considered in characterizing this new literacy construct have been identified and proposed that would best be conceptualized as a multidimensional construct.

The next section of this paper presents a comprehensive literature review dealing with definitions of a large number of literacies. A brief description of disability models is

presented as a basis for conceptualizing the proposed ECB literacy. The paper concludes identifying the key areas that would be incorporated in characterizing this new construct with suggestions for future research.

2. Methodology

This article is based on a comprehensive literature review comprising 43 research articles published in a range of journal repositories including, 'Research Gate', 'Google Scholar', 'Wiley Online Library', 'Taylor & Francis', 'Science Direct', 'Emerald Insight', 'Pub Med,' 'SAGE Journals' and 'JSTOR'.

Initially, 160 articles were extracted using a series of key words, and 144 publications were selected for review in the first round. Finally, 43 papers directly relevant for justifying the case for characterizing ECB literacy were revived systematically in this paper. These 43 articles were examined under four broad categories, viz, (a) types of literacies recognized in literature (b) information on vision and eye health (c) understanding visual impairment and blindness, and the social issues of the visually disabled, and (d) the disability models. Accordingly, insights underpinning the conceptualization of ECB literacy construct were derived.

3. Literature Review

A. Meaning of Literacy

The broader meaning of the term 'literacy' is a quite complex and vary by the context within which it is applied and practiced. This complexity, diversity and the context specific nature of the term literacy can be elaborated by examining the definitions of 'ICT literacy' and 'health literacy', as examples.

ICT Literacy: ICT literacy (i.e. Information and Communication Technology literacy) is defined as "using digital technology, communications tools, and/or networks to

access, manage, integrate, evaluate, and create information in order to function in a knowledge society" (Educational Testing Service (ETS), 2002, p. 2).

This construct focuses on awareness of basic concepts of relevant technologies and developing basic skills to operate them to support day-to-day activities of ordinary citizens. This is quite important for people to effectively function in a knowledge society in the 21st century.

Health Literacy: This literacy is defined as: "The development of a level of knowledge, personal skills, and confidence to take action to enhance personal and community health by improving personal lifestyles and living environments". (World Health Organization, 2009, para. 1)

This construct is designed with the view to enhancing the quality of one's personal health and promoting a healthy community. In addition, for being aware and develop skills for maintaining basic aspects of health, strengthening people's confidence on also emphasized in this literacy. The end goal is to improve lifestyle, quality of life of individuals and the health of the community promoting a comfortable and healthy living in harmony with environment.

Having recognized the complexity and the difficulty in composing a simple concise definition of the term 'literacy', a broad-based explanation of this concept has been produced (De Long, 2012). "Literacy is a social construct, a complex idea that means different things to different cultural group at different times. Therefore, literacy is a relative term and dynamic. While literacy is popularly understood to denote the ability to read and write prose and other print texts, it is an integrated complex of language and thinking processes and skills, incorporating a range of habits, attitudes, interests and knowledge,

...serving a range of purposes in different contexts” (Rintaningrum, 2009).

This description is also in conformity with the objectives of the contemporary world, where people need to “learn, evaluate, assess and validate economic, environmental, social and technological advancement to produce benefits based on the knowledge society” (Giarini et al., 2010, p. 37). This broad description of the term ‘literacy’ forms the basis for characterizing the ECB literacy construct.

B. Literacies Defined in Literature

Literature of over 20 literacies in a wide range of disciplines and perspectives have been reviewed to ascertain if a literacy covering the perspectives of personal eye health and life of the persons with visual impairment and blindness has already been characterized.

It was revealed that a comprehensively defined literacy construct to cover matters related to eye health, blindness, and social inclusion aspects of the sightless has not been developed. Although the health literacy comes close, it portrays a much wider context relating to overall personal and community health, rather than this specific area related to eye and vision. Furthermore, the social inclusion aspect of this vulnerable community is not at all addressed health literacy. The ‘visual literacy’ was also surfaced, but it deals with matters related to visual art and design. It is reasonable therefore, to conclude that a clear knowledge gap in literacy research exists, not having characterized a literacy to cover this important area.

This review also examined definitions of carefully selected 20 literacies to identify basic elements associated with characterizing literacy constructs and methodologies used. It was observed that all constructs that define literacies are of multidimensional nature. This

finding demonstrates that a range of aspects related to this domain need to be in this endeavor.

C. Eye Care, Blindness and Social Intergration

The proposed literacy deals with a range of closely related areas including human eye, eye care, vision, vision impairments and blindness and how the persons who are sightless, could be reasonably integrated into the mainstream society.

D. Human Eye and Vision

The information seeking and experiencing the world by human beings are almost entirely made through five senses (Rupini & Nandagopal, 2015). Visual modality or sense of sight has been the most dominant of the five sensory modalities; Visual, Auditory, Gustatory, Olfactory and Tactile/haptic memory (Pascolini & Mariotti, 2012). Research show that the vision account for about 80% of the information gathered by people (RNIB, 2016).

Person’s ability to function as a member of the society in the physical living environment can be seriously affected along with changes in his or her vision. Furthermore, such a issues may badly influence toward isolation of the person from the wider community (Schmall, 2000).

The eyes are the principle and the frontline component of the chain or events of the human vision system. (Russ & Neal, 2015). The human eye is clearly one of the most complex, valuable and sensitive sense organs and is reported to be the most developed organ of the body at birth (Willoughby et al., 2010). The proper functioning of the human eye and the vision system is of great importance in many respects (Parker E. Ludwig, Rishita Jessu, 2022) and thus, avoiding visual impairment and blindness through maintaining a satisfactory

level of eyesight is a key health concern (Wilson et al., 2006). Hence, the structure and function of the eye and the issues of vision would become a key potential dimension in defining the ECB literacy.

E. Visual impairment and Blindness

The malfunction of any part of the eye and the human vision system would amount to vision problems, which is collectively referred as 'visual impairment'. Thus, visual impairment is a broad term that describes different degrees of vision loss that heavily influence a person's ability to perform the usual activities for comfortable function in the daily life (FamilyConnect: For Parents of Children Who Are Blind or Visually Impaired, 2021). The levels that a person may experience a vision impairment vary and depends upon a range of factors. WHO presents a standard classification visual discrepancies and blindness detailing attributes of such levels (WHO, 2021). The research paper by Shirzadfar and Amirzadeh (2019) presents a comprehensive collection of information related to issues of eye, vision and the recent developments in visual rehabilitation for people with visual discrepancies. WHO, estimates that at least 2.2 billion people in the World experience near or distance vision impairments. The irony is that such impairment could have been prevented for at least one billion, or half of this population. Moreover, the sight of many such individuals could be improved if properly attended to by medical and other means (World Health Organization, 2021). Thus, eye care and seeking appropriate medical and other timely interventions needs to be given due consideration in defining ECB literacy.

Blindness lies at the extreme end vision impairment. There are different, lesser degrees of impaired vision. It must be noted that every vision problem may not be "corrected" (or

brought back to "normal" vision) with medical interventions or use of optical aids etc.

F. Blindness and Challenges to Life Activities

Blindness is the status at extreme end of vision impairment. There are different, lesser degrees of vision issues as indicated. It must be noted that every vision problem may not be "corrected" (or brought back to "normal" vision) with medical interventions or use of optical aids etc.

Persons with visual impairments and blindness, whose vision could not be brought back, invariably encounter many challenges in leading their lives. These issues include personal mobility, psychological, social and economic concerns (Hutmacher, 2019, Rupini & Nandagopal, 2015). If such a situation is going to be a continuing condition and restricts the activities of everyday life of a person, it is described as a disability. Thus, impairments in vision fall in to the broader term 'Disability'(Australia Government, 2013). In this respect a question arises if any form of 'impairments' amount to 'disability' of a person.

Disability literature refers to several models explaining the matters relate to disability. These models provide insights for understanding and exploring the underlying concepts related to the life of the sightless. The 'religious model', 'medical model', 'social model', 'human rights model' and 'biopsychosocial social model' are such frameworks to name a few (Rerief & Letšosa, 2018). The medical model perceives that a person's challenging conditions are attributed to a physical or other impairments are viewed as a medical problem 'attached to' the individual. With the advancement of thinking behind the concept of disability, around 1960-70 the social model was evolved. According to this model, disability is seen as a socially constructed phenomenon (Schneider et al.,

2012). The biopsychosocial model brought about at a later stage presents a more comprehensive approach that explains the issues as a mix of three main determinants - biological, psychological, and societal. Based on the biopsychosocial model of disability, WHO introduced the International Classification of Functioning, Disability and Health (ICF) model to exhaustively describe the concept of disability (WHO, 2001). Thus, the ICF model could be taken as the guiding framework for identifying the key elements associated with the persons with visual impairment and blindness towards the process of characterizing this ECB literacy construct. This model depicts five main dimensions, namely, (a) body functions and structures (b) activities of people, personal functioning, and activity limitations they experience (c) limitations of the sightless, including experiencing light and dark, seeing, reading and mobility issues (d) participation or involvement of people in all areas of life and the participation restrictions and (e) the environmental factors which affect the person's experiences, and external facilitators and the barriers for life activities (Playford, 2015).

4. Conceptualizing Ecb Literacy Construct

This brief discussion provides background for conceptualization towards characterizing the proposed ECB literacy construct. In summary, the following elements have been brought about in this literature review with respect to characterization of ECB literacy construct: (a) overall aim of this construct is to promote personal eye health, and social inclusion of persons with visual impairment and blindness through spreading awareness and appreciation of related issues. (b) This literacy deals with the knowledge and basic understanding required by the public with respect to eye care as well the people with

visual impairment and blindness. (c) Defining this literacy would promote empowerment of this vulnerable community representing persons with visual impairment and blindness. (d) The public (in particular the sighted people) needs to be familiarized with appropriate behaviors to ease the challenges encountered by persons with visual impairment and blindness (e) Key dimensions of ICF model and eye care and health can be used as a guide to in designing this construct.

5. Suggestions For Future Research

As mentioned in the introduction, the next step in this research project would be characterizing a new construct, 'EyeCare and Blindness Literacy'. Thereafter, a valid and reliable instrument to measure this construct will be developed. Future researchers could work on strategies and programs for augmenting the level of ECB literacy in/of the public.

The overall outcome of such initiatives would lead to improved eye health in society in general, reduce the incidence of visual impairments and blindness in the community and bring about better living standards with improved social inclusion of the sightless.

References

- Australia Government, L. R. and P. A. (2013). *Disability Services Act 1993*.
- Bandura, A. (1994). *Self-Efficacy*. Encyclopedia of Human Behavior.
- Barden, O. (2019). Building the mobile hub: mobile literacies and the construction of a complex academic text. *Literacy*, 53(1), 22–29.
- Bhargava, R. (2019). Data Literacy. *The International Encyclopedia of Media Literacy*, 1–5.
- Chen, S., Zhang, S., Qi, G. Y., & Yang, J. (2020). Games literacy for teacher education: Towards

- the implementation of game-based learning. *Educational Technology and Society*, 23(2), 77–92.
- De Long, K. (2012). *The 21st Century Library Workforce*. October.
- Educational Testing Service (ETS). (2002). *Digital Transformation: A framework for ICT literacy*. 2.
- FamilyConnect: For Parents of Children Who Are Blind or Visually Impaired. (2021). *Visual Impairment: Overview*. American Printing House for the Blind.
- Frick, M., & Kahler, A. (1991). A Definition And Concepts Of Agricultural Literacy. *Journal of Agricultural Education*, 32(2), 49–57.
- German, T., & Randel, J. (2013). Basic education. In *The Reality of Aid 1998-1999: An Independent Review of Poverty Reduction and Development Assistance*.
- Giarini, O., Jacobs, G., Lietaer, B., Afgan, N. H., & Carvalho, M. G. (2010). *Volume I, Issue 1 October 2010*.
- Giorgis, C., Johnson, N. J., Bonomo, A., Colbert, C., Kauffman, G., Kulesza, D., & Conner, A. (1999). Children 's Books: Visual literacy. *Reading Teacher*, 53(2), 146–153.
- Hutmacher, F. (2019). Why Is There So Much More Research on Vision Than on Any Other Sensory Modality? *Frontiers in Psychology*, 10(October).
- International Kodály Society. (2014). *Musical Literacy*.
- International Physical Literacy Association. (2017). *Physical Literacy*.
- Jason Fernando. (2021). *Financial Literacy*. Investopedia.
- Jiménez, R., Smith, P. and Teague, B. (2010). Transnational and Community Literacies for Teachers. *Journal of Adolescent & Adult Literacy*, 53(April), 16–26.
- Law, N., Woo, D., de la Torre, J., & Wong, G. (2018). A Global Framework of Reference on Digital Literacy. *UNESCO Institute for Statistics*, 51, 146.
- Lee, W. (2008). The Communication Cookbook. *The Communication Review*, 7(March 2013), 86.
- Lennon, M., Kirsch, I., Von Davier, M., Wagner, M., & al. et. (2003). Feasibility Study for the PISA ICT Literacy Assessment: Report to Network A. *Educational Testing Service*, October, 1–221.
- Norman, C. D., & Skinner, H. A. (2006). eHEALS: The eHealth literacy scale. *Journal of Medical Internet Research*, 8(4), 1–7.
- Parker E. Ludwig, Rishita Jessu, C. N. C. (2022). *Physiology, Eye*. StatPearls.
- Parker, S. (2020). Religious literacy: spaces of teaching and learning about religion and belief. *Journal of Beliefs and Values*, 41(2), 129–131.
- Pascolini, D., & Mariotti, S. P. (2012). Global estimates of visual impairment: 2010. *British Journal of Ophthalmology*, 96(5), 614–618.
- Pegrum, M. (2010). “I link, therefore I am”: Network literacy as a core digital literacy. *E-Learning and Digital Media*, 7(4), 346–354.
- Playford, D. (2015). The International Classification of Functioning, Disability, and Health. *Oxford Textbook of Neurorehabilitation*, 3–7.
- Rerief, M., & Letšosa, R. (2018). Models of disability: A brief overview The medical model: Disability as a disease. *Theological Studies*, 74(1), 1–8.
- Rintaningrum, R. (2009). Literacy: Its Importance and Changes in the Concept and Definition. *Teflin*, 20(2009), 78. RNIB. (2016). *Information about vision impairment: Guide for parents*. 1–108.

Rockman, I., 2005. ICT literacy. *Reference Services Review*, 33(2), pp.141-143.

Rupini, R. V., & Nandagopal, R. (2015). A study on the influence of senses and the effectiveness of sensory branding. *African Journal of Psychiatry (South Africa)*, 18(2), 1-7.

Russ, J., & Neal, F. (2015). Human Vision. *The Image Processing Handbook, Seventh Edition*, 101-162.

Sacco, R. G. (2013). Re-Envisaging the Eight Developmental Stages of Erik Erikson: The Fibonacci Life-Chart Method (FLCM). *Journal of Educational and Developmental Psychology*, 3(1).

Salminen, A. L., & Karhula, M. E. (2014). Young persons with visual impairment: Challenges of participation. *Scandinavian Journal of Occupational Therapy*, 21(4), 267-276.

Schmall, V. L. (2000). Sensory Changes in Later Life. *Pacific N.W. Extension Publication*, 18.

Schneider, C., Barnes, C., & Mercer, G. (2012). Exploring Disability: A Sociological Introduction. *International Sociology*, 27(2), 207-210.

Shirzadfar, H., & Amirzadeh, P. (2019). A comprehensive study on eye issues and modern developments in visual rehabilitation for people with impaired vision. *International Journal of Biosensors & Bioelectronics*, 5(2), 48-54.

Sørensen, K., Van Den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., & Brand, H. (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, 12(1), 80.

United Nations (2015) Transforming our world: the 2030 agenda for sustainable development.

http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

Vidgen, H. A., & Gallegos, D. (2014). Defining food literacy and its components. *Appetite*, 76, 50-59.

WHO. (2001). World Health Organization, Geneva. *World Report on Child Injury Prevention*.

Willoughby, C. E., Ponzin, D., Ferrari, S., Lobo, A., Landau, K., & Omid, Y. (2010). Anatomy and physiology of the human eye: Effects of mucopolysaccharidoses disease on structure and function - a review. *Clinical and Experimental Ophthalmology*, 38(SUPPL. 1), 2-11.

Wilson, C. G., Semenova, E. M., Hughes, P. M., & Olejnik, O. (2006). Eye structure and physiological functions. *Enhancement in Drug Delivery, May*, 473-487.

Acknowledgment

Authors acknowledge the World Bank assisted AHEAD (Accelerating Higher Education Expansion and Development) Research project on 'Quality of Life and Employability potential of Persons with Visual Impairment and Blindness in Sri Lanka' of the SLIIT Business School, for sponsoring this study financially and supporting in many respects.

Authors Biography



Professor Theekshana Suraweera, founder Dean of SLIIT Business School, is currently a Consultant Professor and the team leader for the World Bank sponsored AHEAD Research Project on 'Persons with Visual Impairment and Blindness, SLIIT Business School. Previously, he served at University of Canterbury, New Zealand. His publication record exceeds 35 research papers in high quality local and international conferences and journals, including 'Journal of Small Business

Management' and 'Disability and Society' with over 250 citations.



Colinie Wickramaarachchi is currently an Assistant Lecturer working under the department of business management of SLIIT Business School. She was graduated with a first-class honors with an outstanding academic award for Business Management from SLIIT. Previously, she has worked as a finance intern for Central Bank of Sri Lanka.



Anudi Gamage, is a final year undergraduate in the Business Faculty of the Sri Lanka Institute of Information and Technology, pursuing for the BBA Special Honors degree specialized in Management and Information Systems. The study area of the research is related to Persons with Visual Impairment and Blindness.



Chanchali Chamodika, is a final year undergraduate in the Business Faculty of the Sri Lanka Institute of Information and Technology, pursuing for the BBA Special Honors degree specialized in Management and Information Systems. The study area of the research is related to Persons with Visual Impairment and Blindness.



Kavin Mudalige is an undergraduate at the Sri Lanka Institute of Information Technology (SLIIT), specializing in the field of Management Information Systems (MIS). He received his primary and secondary

education from Thurstan College Colombo 07. His final year of university as a research field of study of the research is related to people with visual impairment and blindness.



U.V.A. Parami, a recent LLB Graduate of the Faculty of Law, University of Colombo, is currently working with as the research assistant for the World Bank sponsored AHEAD Research Project on 'Persons with Visual Impairment and Blindness, SLIIT Business School. She has been contributing for disability advocacy and research work as an active member of the Enable Lanka Foundation for several years. She has published in several international and local academic journals and has presented her recent research work for international research conferences on law, human rights and disability related matters and is interested in multi-disciplinary legal and disability studies.



Samantha Bandara is currently a Consultant and the research manager for AHEAD project on Persons with Visual Impairment and Blindness, SLIIT Business School. She is a visiting lecturer of Open University-Sri Lanka and a private university institute. Previously, she served as a Consultant to the Presidential Secretariat, and an economist and a research expert in managing public, private, regional, and international funded research projects. Her publication history records for research papers in high quality local and international conferences and journals. She is an active member of professional associations of PASL and SAEA.