Research problem

Dyslexia and online search behaviour in undergraduate students.

This research aims to investigate whether current understanding of information seeking can be applied to those with cognitive disabilities.

Information seeking behaviour models and information retrieval systems need to evolve to take account for those with disabilities. Although this is true for disabilities in general, this thesis research seeks to consider how they can be adapted to include learners in higher education with dyslexia.

Dyslexia is defined as an unexpected weakness in reading, writing and spelling (BDA, 2013) due to difficulties with phonological awareness and processing (Miles and Miles, 1990). Dyslexia impacts upon the way information is processed, stored and retrieved (Reid, 2007) and symptoms caused by poor verbal working memory include difficulty following instructions and learning new vocabulary. It is important to ascertain whether these symptoms impact upon information seeking and information retrieval success.

Potential barriers that this condition causes within higher education need to be examined in the context of information seeking behaviour and information retrieval systems in order to facilitate discussion that will lead to the provision of practical advice and solutions. Several information behaviour models recognise that information seekers can be influenced by external and environmental barriers (Wilson, 1981; Dervin, 1998; Kuhlthua, 1985), but do not acknowledge that a person's information seeking behaviour could be explained by barriers caused by cognitive disabilities. Likewise, there have been investigations into the impact of cognitive variables on online information retrieval, such as cognitive styles in internet searching (Ford, Millar and Moss, 2001), but very few that seek to understand the impact of overarching weaknesses in a person's cognitive profile. To date, there have been two studies that considered the impact of working memory on information retrieval (Macfarlane *et al,* 2010*;* MacFarlane *et al,* 2012). These investigations concluded that low working memory scores do influence relevance judgements and this is one area within which this research hopes to enhance the evidence.

In order to find appropriate information sources for use in an undergraduate assignment, dyslexic learners, as information seekers and information retrieval system users must describe and define their information need in a written medium and this research seeks to understand if there are elements of this process that are problematic. Within higher education environments, dyslexic learners utilize assistive technologies (Draffan, Evans and Blenkhorn, 2007) and a variety of support strategies (Reid, 2007) in order to access the curriculum. However, the skills needed to locate and evaluate appropriate information sources for use within an assignment, as described in information literacy models (CILIP, 2013; SCONUL, 2011; ACRL, 2015), have not been analysed from this information user profile. This research seeks to begin to fill the gap in knowledge with regards to the impact of disabilities in information seeking behaviour and to add to the debate surrounding the impact of dyslexia on learners' Higher Education experiences and success therein.
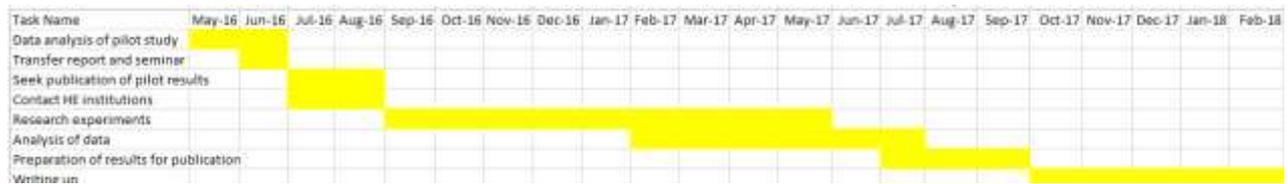
Progress to date

Ethical approval for an initial study was sought from the department of computer science research ethics committee at City University and awarded in June 2015. The pilot study began on 07/09/2015 in the higher education College where the researcher is employed. The

research protocol is as follows; initial interview, within which participants underwent screening exercises to ascertain data on three cognitive variables: working memory, rapid word naming and reading speed/error rate. These are cognitive screening exercises that are often used in the diagnosis of dyslexia. During this interview, participants also completed a semi-structured interview and a questionnaire, in which questions were directed at gaining an understanding of the participants' level of self-efficacy with regards to finding appropriate sources to complete an assignment successfully, what their plan of action was and their familiarity with the two systems to be used for online information searching: EBSCO Discovery Service and Google. Screen-recording software, BB Flashback (Blueberry, 2016), was installed on the participants' laptops, or they were shown how to use Quicktime (Apple Inc., 2016) screen recording on Macs, and they were asked to record searches for sources of information for one of their modules. Participants were asked to record as many searches as they are able and these screen capture video diaries will be submitted at the end of the study, along with the reference list of the participant's submitted assignments. A closing interview will be conducted to ascertain how successful the participants felt the searches performed were and to gain an overview of the tactics employed.

Eighteen participants have been recruited to the pilot study, nine with a diagnosis of dyslexia and nine without. All initial interviews have been carried out and three of the participants have completed the research. The closing date for the final module involved is 25/04/2016 and all closing interviews will be completed by 15/05/2016.

Work plan

Data from the pilot study will be analysed by the beginning of June 2016 and a journal paper will be prepared soon after. Higher education providers in the U.K. will be contacted before September to facilitate iterations of the research experiment throughout the 2016-2017 academic year. This will allow for thesis completion by February 2018.

Task Name	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18
Data analysis of pilot study																						
Transfer report and seminar																						
Seek publication of pilot results																						
Contact HE institutions																						
Research experiments																						
Analysis of data																						
Preparation of results for publication																						
Writing up																						

Areas for discussion/problems encountered

Are current information seeking models suitable for use from a dyslexic learner's profile?

As the profile of dyslexic learners vary, which other variables could be included in the methodology to provide meaningful analysis of the impact of dyslexia on information seeking behaviour? For example; visual distress, self-esteem, co-occurring difficulties such as ADHD and dyscalculia, visual thinking strengths, creativity.

References

ACRL (2015) *Framework for Information Literacy for Higher Education.* Available at: http://www.ala.org/acrl/standards/ilframework (Accessed: 25/07/2015)

Apple Inc. (2016) *Quicktime* Avialable at: http://www.apple.com/uk/quicktime/download/ (Accessed: 22/02/2016)

BDA (2013) *Dyslexia and Specific Learning Difficulties in Adults.* Available at: http://www.bdadyslexia.org.uk/dyslexic/dyslexia-and-specific-learning-difficulties-in-adults (Accessed: 23/12/2015)

Blueberry (2016) *Flashback Express* Available at: http://www.flashbackrecorder.com/express (Accessed: 22/02/2016)

CILIP (2013) *Information Literacy Skills.* Available at: http://www.cilip.org.uk/sites/default/files/documents/Information%20literacy%20skills.pdf (Accessed: 02/01/2016)

Dervin, B. (1998) 'Sense-making theory and practice: an overview of user interests in knowledge seeking and use' *Journal of Knowledge Management.* 2 (2) pp.36-59

Draffan, E., Evans, D., & Blenkhorn, P. (2007). 'Use of assistive technology by students with dyslexia in post-secondary education.' *Disability & Rehabilitation: Assistive Technology*, (2),pp.105-116

Ford, N., Miller, D., and Moss, N. (2001) 'The Role of Individual Differences in Internet Searching: An Empirical Study' *Journal of the American Society for Information Science and Technology* 52 (12) pp.1048-1066

Kuhlthau, C. (1985) 'A Process Approach to Library Skills Instruction.' School *Library Media Quarterly*, 13 (1), pp.35-40

MacFarlane, A., Al-Wabil, A., Marshall, C. R., Albrair, A., Jones, S. A. & Zaphiris, P. (2010). 'The effect of dyslexia on information retrieval: A pilot study.' *Journal of Documentation,* 66(3), pp. 307-326.

MacFarlane, A., Albrair, A., Marshall, C. R. & Buchanan, G. (2012). 'Phonological working memory impacts on information searching: An investigation of dyslexia.' Paper presented at the 4th Information Interaction in Context: 2012, 21-08-2012 - 24-08-2012, Nijmegen, Netherlands.

Miles, T.R, and Miles, E. (1990) *Dyslexia a Hundred Years On.* Milton Keyes: Open University Press

Reid, G. (2007) *Dyslexia.* London: Continuum Books

SCONUL (2011) *The SCONUL Seven Pillars of Information Literacy. Core Model for Higher Education* [pdf] Available at: http://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf (Accessed: 02/01/2016)

Wilson, T. D. (1981) 'On user studies and information needs.' *Journal of Documentation*, 37(1), pp.3-15

CURRICULUM VITAE

	Lynne Cole
Present Post	
Sept 2015 – P't	LRC Manager and Lecturer, Norland College, Bath
Aug 2011 – Sept 2015	LRC Manager and Student Support Coordinator, Norland College, Bath
	I have been a part of the education team of this small, independent Higher Education College for over four years and am enjoying the challenge of delivering research informed teaching to ensure a high level of student achievement and engagement.
Qualifications	Part-time PhD in Information Science started 01/02/2015. City University
2007	MSc Information and Library Studies: Distinction. University of Strathclyde
2002	BA Hons English Literature: 2.1. University of Strathclyde
Prof'l Bodies	CILIP Chartered Member
Main Responsibilities	Management of Learning Resource Centre.
	Module Lead for; Level 4 Professional Development and Level 6 Research Methodologies.
	Dissertation supervisor.
	In my previous role as Student Support Co-ordinator I was responsible for delivering group and one-to-one study support sessions to students with a variety of Specific Learning Difficulties
Employment History	June 2009 –August 2011, Abronhill High, Glasgow. Librarian
	Dec 2007 – June 2009, St Pauls High, Glasgow. Librarian
	Dec 2008 – Jun 2009, Glasgow City Council. SEN and ASL assistant
Recent CPD	2016 – Attended CILIP conference
	2015 – Presented at Solent University Library Teachmeet on PhD proposal
	2015 - Level 3 Dyslexia Awareness in Higher Education
	2014 – Attended BDA conference

Contact details

Lynne Cole

LRC Manager and Lecturer

Norland College

London Road, Bath, BA1 6AE

Tel: +44 (0) 1225 904040 Mobile: +44 (0) 7789076437

Lynne.Cole@city.ac.uk

Supervisor Contact Details

Dr. A. MacFarlane

Reader in Information Retrieval

City University London

Northampton Square, London, EC1V 0HB

A.Macfarlane-1@city.ac.uk

Tel:+44 (0)20 7040 8386

URL: http://www.city.ac.uk/people/academics/andrew-macfarlane