

<p>Institution: UNIVERSITY OF BIRMINGHAM</p>
<p>Unit of Assessment: C25 Education</p>
<p>Title of case study: Removing Barriers to Learning for Visually Impaired Children and Adults</p>
<p>1. Summary of the impact</p> <p>The Visual Impairment Centre for Teaching and Research (VICTAR), which focuses on understanding and removing the barriers that prevent people with visual impairment accessing education, has been particularly effective in: securing legislative change for braille readers (e.g. the braille labelling of medication); influencing policy documents of NGOs involved in supporting people with visual impairment (by providing reliable and up to date statistics on employment, and the factors associated with employment); and influencing the professional training of teachers who support visually impaired pupils (by improving teacher reflection and systematic record keeping).</p>
<p>2. Underpinning research</p> <p>The Visual Impairment Centre for Teaching and Research (VICTAR) at the University of Birmingham has a distinguished history of research into learning and the broader use of braille by children and adults into visually impaired pupils' access to the curriculum. The key researchers in VICTAR in the period 2008 – 2013 were Dr Graeme Douglas (Reader); Professor Mike McLinden; Dr Steve McCall (Senior Lecturer, 2008 - 2011); Dr Paul Lynch (Research Fellow); Dr Ben Clements (Research Associate, 2008 - 2009); Sue Pavey (Research Fellow, 2008 - 2011). The work of VICTAR engages significantly with teacher training, and this is particularly important in its international research with low-income countries. Three examples of research that have produced significant impact have been selected from the impact portfolio of the Centre:</p> <p>1 - Improving the management of self-medication for educational and wider purposes</p> <p>The starting point for this research was that 'standard' height of braille dots on pharmaceutical packaging varied from country to country. This is an important issue for visually impaired learners of all ages, since incorrect use of essential medicines can affect attention, achievement, behaviour and overall educational attainment. More broadly, enabling learners to self-medicate accurately is important for their independence. VICTAR researchers (led by Douglas) brought their knowledge of how braille readers learn and use braille to identify what braille height was required in order for them to be able to effectively read the instructions on medicinal packets. Working with support from the Royal National Institute of Blind people (RNIB) and Kenilworth Products, the VICTAR team set up a study of braille readers aged 15 up. It used custom made embossed braille on fictional medicine boxes (matched to medicine boxes that can commonly be obtained from pharmacists). The aim was to compare the participants' performances when reading from six different heights of embossed braille prepared and measured using industry standard techniques.</p> <p>The research generated two main insights. First, the team found that braille with a mean dot height of 0.18mm and a minimum dot height of 0.12mm or higher was a useful starting point in considering the minimum embossed braille height on packaging. However, it was recommended that manufacturers use the highest possible height of braille to ensure that the majority of braille users will be able to read it. Secondly, the research produced important new knowledge for educators of visually impaired children and adults by providing evidence to show how the ability to read braille varies depending on age. The team identified that braille readers over 60 years of age found it particularly difficult to read braille at lower heights. As it is more likely that people in this age group would be on medication, then a higher braille height is beneficial for personal well-being and also to enhance access to learning opportunities (see R1 and R2 below).</p> <p>2 - Visual Impairment, Educational Achievement and Employment</p> <p>Project Network 1000 was a research study undertaken by VICTAR researchers (led by Douglas) which started in 2004. Its aim was to survey visually impaired people on a range of social issues in order to influence service development and provision. It was initially funded for three years by the Big Lottery Fund through VISION 2020 UK on behalf of sector organisations (2.5 years of follow-on funding was provided by sector organisations Vision 2020 UK and RNIB). The Project was the first of its kind to be conducted with major sector wide involvement. The survey involved a sample of</p>

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1000 registered blind or partially sighted participants which was built up using stratified random sampling, weighted in relation to age to ensure an appropriate distribution across different age groups (R3). The research established the relationship between the onset of visual impairment at an early age and higher educational achievement. As well as visual impairment being shown to be associated with very low employment generally, analysis identified more specifically that those people with good educational qualifications were more likely to be employed. Importantly, the educational experiences of people with childhood onset of visual impairment were considered as the level of support that children received at this crucial stage had an impact, not only on future employment prospects, but also upon many other aspects of their lives (R4). The support structures to enable visually impaired people to obtain good educational qualifications are of key importance. Over this REF period the Network 1000 project has been the most significant source of data in relation to the social circumstances of people who are registered as blind and partially sighted in Britain – it is the largest survey which has employed probability-based sampling, the only large survey to have a longitudinal dimension (participants were interviewed twice, approximately 18 months apart), and the only survey to include a sub-sample of people with learning disabilities.

3 – Improving educational opportunity for visually impaired students in low-income countries

VICTAR researchers (led by Lynch) undertook funded research for Sightsavers, an international charity that works with partners in low-income countries to eliminate avoidable blindness and promote equality of opportunity for visually impaired people. Separate research in Uganda and Kenya took place in 2007 when, using a participatory research framework, itinerant teachers of visually impaired children recorded their work over a two month period using questionnaires and journals, and took part in focus groups and workshops. The research provided new insights into teacher development in this context in which prior to the research teachers rarely systematically and consistently recorded pupil assessment, progress or outcomes (R5 and R6).

3. References to the research

All outputs in the previous section were either submitted to RAE's 2001 and 2008 or appeared in peer reviewed journals/refereed by funders.

Research Outputs:

- R1) Douglas, G. Weston, A., Whittaker, J., Morley-Wilkins, S. and Robinson, D. (2008) *Final Report: Braille dot height research: Investigation of Braille Dot Elevation on Pharmaceutical Products*, Birmingham: University of Birmingham [available: <http://www.birmingham.ac.uk/research/activity/education/victar/research/index.aspx>]
- R2) Douglas, G. Weston, A., Whittaker, J., Morley-Wilkins, S. and Robinson, D. (2009) 'An investigation of embossed Braille dot height for labelling on pharmaceutical products', *Journal of Visual Impairment and Blindness*, vol. 103, no. 10, pp. 662-667 [available: <http://www.docstoc.com/docs/44988070/An-Investigation-of-the-Height-of-Embossed-Braille-Dots-for-Labels-on-Pharmaceutical-Products>]
- R3) Douglas, G., Corcoran, C and Pavey, S. (2006) *Network 1000: Opinions and circumstances of visually impaired people in Great Britain: report based on over 1000 interviews*. Birmingham: University of Birmingham [available: http://www.vision2020uk.org.uk/core_files/Full%20Network%201000%20report%20-%20FINAL%20VERSION%20September%2006-MASTER.pdf]
- R4) Pavey, S., Douglas, G. and Corcoran, C. (2008) 'Transition into adulthood and work – findings from Network 1000', *British Journal of Visual Impairment*, vol. 26, no. 2, pp. 202-216 [doi: 10.1177/0264619607088283]
- R5) Lynch, P., McLinden, M., McCall, S., Douglas, G., (2012) 'Developing participatory approaches for use in an action research project with teachers who support children with visual impairment in Kenya and Uganda: reflections on the relational praxis between participants and research institutions', *Research in Comparative and International Education*, vol. 7, no. 3, pp. 282-295 [available: <http://dx.doi.org/10.2304/rcie.2012.7.3.282>]
- R6) Lynch, P., McCall, S., Douglas, G., McLinden, M. and Bayo, A. (2011) 'Inclusive educational practices in Uganda: evidencing practice of itinerant teachers who work with children with visual impairment in local mainstream schools', *International Journal of Inclusive Education*, vol. 15, no. 10, pp. 1119-1134 [doi: 10.1080/13603116.2011.555070]

Research Grants:

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- Douglas, G, (PI) with McLinden, M (CI), McCall, S (CI) and Weston, A. (CI) *Investigation of Braille Dot Height Elevation on Pharmaceutical Products*, Sponsor: Royal National Institute of Blind People (RNIB), June 2007 – January 2008, £39,550.
- Douglas, G (PI) with Pavey, S (CI), Corcoran, C (CI), McLinden, M (CI and McCall, S. (CI) *NETWORK 1000: Surveying the changing needs of visually impaired people*, Sponsor: Community Fund. March 2004 – February 2007, £336,000.
- Douglas, G (PI) with Corcoran, C (CI) and Pavey, S. (CI) *Network 1000: Phase 2*, Sponsor: Big Lottery Fund through Vision 2020. April 2007 – December 2009, £45,000.
- Lynch, P (PI) with McCall, S. (CI), *Education of children with visual impairment*, Sponsor: Sightsavers. June 2006 – January 2015, £428,102.
- Lynch, P (PI) with Douglas, G. (CI), *Making educational research count for children with disabilities in Malawi, Kenya and Uganda*, Sponsor: Economic and Social Research Council. September 2013 – August 2014, £38,434.74.

4 Details of the impact

1 – *Improving the management of self-medication for educational and wider purposes*

The findings of the research into Braille height on pharmaceutical packages **formed a British standard** (which then became a European Standard) (see source 1 below). The Standard specifies requirements and provides guidance for the application of braille to the labelling of medicinal products. The Standard includes a specification about braille height which refers directly to this research. It was approved and recommended at a meeting in Berlin (Sep. 2012) between CEN (European Committee for Standardization) and the International Organisation on Standards to accept the European Standard as an International Standard (source 2).

After a 5-month international voting period between November 2011 and April 2012, the proposed CEN-ISO standard (ISO/DIS 17351) was unanimously approved by 28 voting countries. A statement released by the Royal National Institute of the Blind said *‘it significantly increases the reach and impact of the European standard which we were instrumental in setting, which has **already improved braille on medicine products in Europe**. As an international standard we will now be **helping to improve braille on medicine packaging worldwide**’* (source 3). According to the European Blind Union *“There are estimated to be over 30 million blind and partially sighted persons in geographical Europe”* (<http://www.euroblind.org/resources/information/nr/215>). Of these, around 10% are braille readers (thus around 3 million visually impaired Europeans benefit from this legislation). A survey of adult braille readers in the UK *‘found that the implementation of the European Directive and European Standard for braille on pharmaceutical packaging ... has had a **positive impact for consumers**, with significant numbers reporting that since the introduction of the standard (1) the quality of the braille had improved and (2) the braille was on more products’* (source 4). The specific requirements of braille readers in reading labels on packaging has been **cited by international bodies** for visual impairment, such as EBU: The Voice of Blind and Partially Sighted People in Europe (source 5). The standard is documented in evidence on guidelines by government agencies such as the Medicine and Healthcare Regulatory Agency (source 6) and the European Medicines Agency.

2 – *Visual Impairment, Educational Achievement and Employment*

The UK Vision Strategy (source 7) is the first cross sector strategy for visually impaired people and references in the document directly attribute the Network 1000 research undertaken by VICTAR. Dr. Graeme Douglas, the lead researcher on the project, was also a member of the Strategy working team on ‘Empowerment and the Inclusive Society’. His direct participation in the process enabled him to contribute the knowledge gained from the research as well as the wider research-based expertise built up by VICTAR and thus to **help shape the strategy**. The practice guidelines of all agencies involved with visually impaired children and adults are informed by this work, as the UK Vision Strategy is being implemented through a strong alliance of statutory, health and social care bodies, voluntary organisations, eye health professionals and individuals. Specifically in relation to education, the beneficiaries include visually impaired young people: *“It is estimated that there are around 25,000 children and young people in Britain from birth to 16 with a visual impairment of sufficient severity to require specialist education service support.”* (www.rnib.org.uk/professionals/education/research/pages/facts_and_figures.aspx). The

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implications of the strategy for these 25,000 visually impaired children in Britain can be seen by looking at the UK Vision Strategy implementation plan for England (2009-2014), which is supported by government. The findings generated by Douglas and colleagues demonstrated employment outcomes for visually impaired people are very poor (33%) and an estimated 40% 'not in education, employment or training' under the age of 30 years. Nevertheless, high educational attainment and engagement was found to have a very high positive impact on employment outcomes. These findings helped **emphasise the importance of education within the Strategy** and as such, education and employment are central to Strategy Outcome 3 (inclusion, participation and independence for people with sight loss). Recommendations and priorities include: education and vocational training should be accessible to people of all ages with sight loss: a clear and smooth transition pathway from children's and young people's services to adult services should be established or maintained; people with sight loss should have equal access to job opportunities and the present negative attitudes should be tackled (sources 7 and 8).

3 - *Improving educational opportunity for visually impaired students in low-income countries*

Lynch et al's research demonstrated that by taking part in the research, the teachers began to develop reflective skills in relation to their own practice. Follow-up studies revealed a significant impact had been made on their practices. The research found that, as a result of these acquired skills, a majority of pupils in the programme were given confirmed diagnoses of their visual impairment and consequently received a service enabling them to participate and learn effectively. In addition, prior to this research, there was no recognition or understanding of the support required by itinerant teachers in East Africa who work with visually impaired children. In recognition of the contribution of this study and other VICTAR research, VICTAR is cited by Sightsavers as one of the research partners with whom it produces the best results (http://www.sightsavers.org/in_depth/research/research_partners/default.html). The study has also influenced international agencies, with UNESCO featuring it in its report 'Reaching the Marginalised' (2010) (source 9). More directly, in July 2013 there were over 4,000 children with visual impairment in East Africa enrolled in education programmes designed to support them. Large numbers of these will have **benefitted from the change in practices recommended to their teachers** as a consequence of the research. Sightsavers have also used the research findings to produce an education and advocacy pack outlining ways in which high quality education for visually impaired children can be delivered in their local context, in ways which are scalable, adaptable and cost effective (source 10).

5. Sources to corroborate the impact

- [1] British Standard EN15823 (31st July 2010).
- [2] Factual statement provided by Royal National Institute of the Blind (available on request).
- [3] [http://www.pharmabraille.com/blog/Pharmaceutical Braille News/post/International Standard for Braille on medicine packaging/](http://www.pharmabraille.com/blog/Pharmaceutical%20Braille%20News/post/International%20Standard%20for%20Braille%20on%20medicine%20packaging/)
- [4] Impact report on braille standard for medicine packaging www.rnib.org.uk/aboutus/Research/reports/reading/Pages/braille_medicine_packaging.aspx
- [5] European Blind Union: The Voice of Blind and Partially Sighted People in Europe <http://www.euroblind.org/working-areas/access-to-information/nr/17>
- [6] Medicine and Healthcare Regulations Agency: <http://www.mhra.gov.uk/Howweregulate/Medicines/Labelspatientinformationleafletsandpackaging/Brailleonlabellingandinpatientinformationleaflets/index.htm>
- [7] UK Vision Strategy <http://www.vision2020uk.org.uk/ukvisionstrategy/page.asp?section=291§ionTitle=Strategy+publications>
- [8] Implementation Plan for England 2009-2014. <http://henshaws.org.uk/public/about-us/uk-vision-strategy/ukvisionstrategyimplementationplanpdf.pdf>
- [9] UNESCO Reaching the Marginalized (2010) (p. 203) www.unesco.org/new/en/education/themes/leading-the-international-agenda/efareport/reports/2010-marginalization/
- [10] Findings from research reported by Sightsavers – advocacy pack (available from 2010). http://www.sightsavers.org/in_depth/policy_and_research/education/default.html