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Developing a novel system to support language acquisition in children with CCN: An ethnographic study

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INTRODUCTION

Communication aids designed for use by young children are typically based on a word phrase retrieval system using a grid-based symbol access paradigm. What has become clear, however, is that such systems have significant usability shortfalls for young children with complex communication needs (CCN). These systems may be failing these emergent communicators by hindering their capacity to acquire vocabulary during a critical developmental phase, and to their lifelong detriment (Light & Drager, 2007).

Moreover, user-centred design (UCD) has often been neglected with this user group due to the challenges that they present – a factor that may have exacerbated AAC device abandonment.

Informed by prior research unveiled during a literature review, the authors recognise that early intervention (EI) is key to achieving optimal outcomes for children with CCN (Odom et al, 2003) – and the adults they will eventually become.

AIM

The aim of this doctoral research is two-fold. First, to investigate a system to facilitate more natural and timely vocabulary acquisition in children with CCN. Computer vision technology (CV) combined with a child-friendly interface will be the basis for the envisaged system with the first author currently exploring the potential of Densecap (Johnson et al, 2016). It is hypothesized that CV automation harnessed in this way may enable and enhance EI, with positive implications for vocabulary acquisition. A secondary aim of this study is to apply and explore UCD approaches in developing the technical tool described.

METHOD

The focus of this presentation is upon the first phase of the research involving an ethnographic investigation – ethically approved – involving the collection and analysis of data reflecting current practices within a host special education school. Specifically, the study involved:

(i. Identifying vocabulary acquisition strategies currently in use;

(ii. Mixed methods of participant observation, field notes, and interviews with staff undertaken over a six-week period in 2017;

(iii. Participants included: 175 pupils, 30 teachers, three speech and language therapists (SLTs), and a number of support staff, recruited within the host school;

(iv. Vulnerable group(s) with a diverse range of cognitive, developmental and/or physical disabilities, presenting several ethical and logistical challenges for the methodology.

In this paper, the results of the ethnographic analysis of this data, including a variety of strategies adopted to mitigate potential disruption to the data collection phase, will be presented.

RESULTS

As a contemporaneous project mid-way through active data collection at time of writing, the literature review and early ethnographic observations (over 12 days) and interviews (n = 6) reveal:

. The variety of assessment tools in use at the host school (e.g. Routes for Learning, PVCS, Derbyshire Language Scheme).

- A range of low and high tech AAC tools, access methods and strategies (e.g. Objects of Reference, PECS, Makaton, Canaan Barrie; and single switches, VOCAs, Eye Gaze, auditory scanning).
- Several intervention strategies, including: systematic instruction and contingent reinforcement (Ganz et al, 2014); certificates of participation as a tangible incentive (Menzies, 2013); use of singing, colours, storytelling, tactile play to enhance engagement/reinforce learning.
- Common themes emerging in interviews with SLTs and teachers in relation to data collection and UCD within the school setting.
- Practical solutions for the curation of research data and artefacts in a relatively chaotic or "hostile" environment potentially affecting sensitive electronic recording equipment and paper documents vulnerable to accidental damage.

CONCLUSION

This ethnographic study explores the feasibility of conducting UCD involving young children with CCN at school. Close consultation with research partners and teachers yielded ways to address barriers to understanding children's views and experiences of interacting with a nascent AAC system. These methodological insights will inform future research into the development of a technical tool supporting EI and vocabulary development.

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Evidence Area: AACcess emerging technologies, AACcess language and literacy

Content Focus Area: Research Evidence, Research Methods and Theories