188 The Visual Design of Mouse Icons for Digital Literacy and Inclusion

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Research Domains

Student Access and Experience (SAE)

Abstract

Flórez-Aristizábal (2018) describes how the growth in technology is changing the way society communicates, specifically within education. They highlight both the scope of adaptation possible with technology within education, and the lack of frameworks to guide developers & designers in the development of technological tools aimed at the Deaf community. This paper raises awareness of the challenges faced by Deaf students for (PC) computer based demonstrations, and presents a work-in-progress study that examines the use of digital computer mouse icons (DCMI) as graphic representations for conveying meaning and information to members of the Deaf community. Qualitative focus groups and task-based observations were used to gather user perceptions and experiences regarding the use of DCMI in enhancing the delivery of digital literacy skills available to students from the Deaf/ Hard of Hearing (HoH) communities. The project aims to enhance access of software and technology to Deaf users.

Full paper

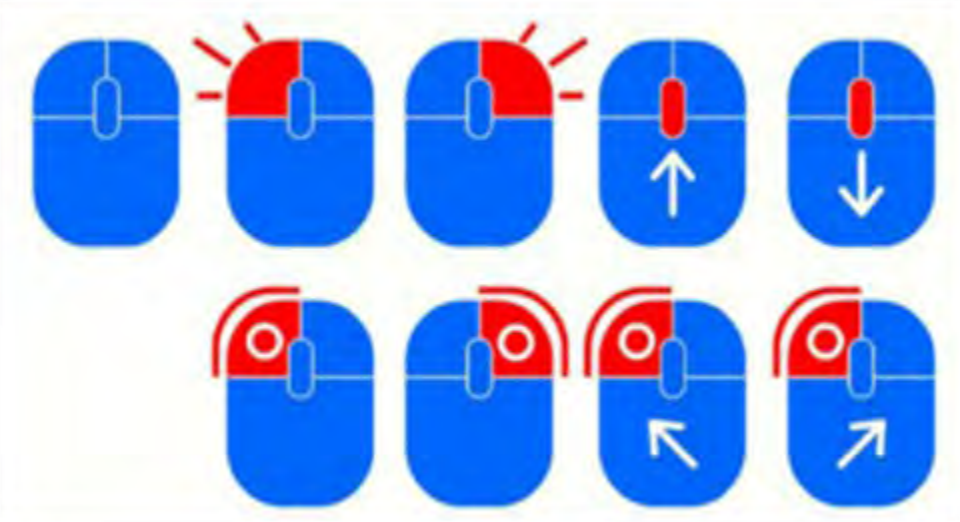
Introduction

Education needs to take a more visual approach to communicate digital literacy skills to students from the Deaf community. Lane (2010) refers to people from the Deaf community as ‘people of the eye’, highlighting the visual nature and approach of the Deaf community. The National Deaf Children’s Society illustrated the disparity between Deaf and hearing students (NDCS, 2019), with less than one in three deaf pupils (29%) going to university. Alarmingly only 5% of teachers believe the current education system allows Deaf students to hit their full potential (NDCS, 2022). Berge (2015) highlights the challenges of efficiently passing on instructions to Deaf students. With Stinson (2013) seeing potential in computer based notes, even seeing improvement in post-testing. Digital Computer Mouse Icons are an attempt to represent information visually as an effective means.

Explanation of DCMI

Digital Computer Mouse Icons (DCMI) constitute a tool by using animated digital illustrations of a computer mouse and keyboard to summarise the actions of these devices within a computer demonstration [Fig. 1]. The design allows for the icons to be printed (with a specific frame shown) and still be legible to the user group.

FIG 1 - Initial illustration of the Digital Computer Mouse Icons (DCMI).



Created by Jonathan Mortimer

Methodology

Qualitative focus groups of five users from the Deaf community and observations were used to gather user perceptions and experiences regarding the use of DCMI. During these sessions a Sign Language Interpreter was present.

Findings

Each of the participants highlighted their challenges in learning computer graphics software while studying at College or University. This data was compiled together and used as an initial list of user requirements. Two main points were raised consistently across the focus group:

1. Having all the necessary information to understand PC computer based task/s.
2. A language gap due to a lack of BSL signs for animation/games terminology.

Observation

Berge (2015) mentions that Deaf students can only have their visual attention focused on one source at a time. It was observed that demonstrations of a (PC) computer based task, while users were learning computer graphics software, had to be delivered three times in the same session to Deaf participants. This is to ensure all the necessary information of the task was passed on, with each 'information pass' having a specific purpose [Fig. 2]. The initial design [Fig. 1.] of the DCMI was conceptualised as a paper based solution to offer clarity to users on mouse & keyboard actions. The DCMI design was later developed as an animated digital solution to help illustrate computer mouse and keyboard actions., whilst noting the required change of delivery approach for hearing and Deaf students - with simultaneous presentation of visual & auditory information creating a barrier for Deaf students, who cannot look at the interpreter and the demonstration at the same time.

FIG 2 - Table summary of the three 'information passes'.

No.	Step	Summary	Description
1	Instructions of the task/s is conveyed to student	Instructions	Sign language interpreter translates information of the task to student/s from lecturer / teacher
2	On-screen demonstration of task	Screen demo	Presentation of task / steps via an on-screen demonstration in the context of task
3	Highlights computer mouse & keyboard actions	What are the hands doing	Highlighting actions of hands, computer mouse movements and keyboard shortcuts

Impact

This study raises awareness of the challenges faced by Deaf students for (PC) computer based demonstrations. It encourages further discussions with delivery staff in regards to three information passes mentioned in this paper. The main impact is the potential to improve Deaf student retention rates, as well as encourage more Deaf students to pursue College & University education, with a refined approach and knowledge of three information passes and DCMI. There is scope that other groups and communities could benefit from the addition of a visual indicator for using a computer mouse & keyboard.

Next steps

A user centred testing approach will examine how the solutions developed can evolve to ensure future pedagogical approaches are embedded directly with the Deaf community. Scotland is uniquely placed to champion a new visual based approach to digital literacy skills with the Deaf community, with the BSL [Scotland] act 2015 representing a significant milestone in recognising and promoting the rights of British Sign Language (BSL) users in Scotland.

References

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