Facilitating user feedback in the design of a novel joke generation system for people with severe communication impairment.

Annalu Waller[1], David O'Mara[1], Ruli Manurung[2], Helen Pain[2], Graeme Ritchie[3]
[1]University of Dundee, [2]University of Edinburgh, [3]University of Aberdeen

Objective

Children with communication impairments are often reliant on communication aids, but these give little scope for generating novel language. This inhibits experimentation with language and limits experimentation with humorous ideas.

Language-impaired children and adolescents have been found to have significantly poorer comprehension of humour than their peers with typical language development (O'Mara, 2004; Spector, 1990; Spector, 1992). The STANDUP (System To Augment Non-speakers Dialogue Using Puns) project is addressing this deficiency by providing software which allows the user to experiment with the construction of simple jokes. This computer-facilitated joke generation will allow non-speaking children to "play" with novel language in a similar way to children with typically developing language skills.

The underlying joke generating mechanism is based on previous work on the automated generation of punning riddles and is described elsewhere (Binsted and Ritchie, 2001). This paper focuses on the issues encountered when designing a user interface which must be accessible to children with a variety of communication, language and physical disabilities. In particular, methods for including users at the requirements gathering stage are presented.

Significance

Moving from "system-centred" to "user-centred" design has enabled great improvements to be made in the effectiveness of user interfaces (Wood, 1998). The UCD approach is vital in the area of assistive technology as the user population is very heterogeneous. However, this approach presents a challenge when designing for people with severe communication impairments who may not yet have acquired effective communication strategies.

Our research team is committed to user involvement at all stages of the design process. It was therefore essential that the end users were involved from the beginning of the development process. However, it was not sufficient only to talk to domain experts, i.e. teachers and therapists. It was as important to ask expert end-users for their opinion of what they thought a joke generation system should offer.

Methods

Two domain user groups were consulted during the initial requirements gathering. Speech and language therapists (SLTs) were approached to identify the characteristics of children who would benefit from the proposed software and to comment on paper-based sketches of preliminary interface design ideas. The identification of end user characteristics and discussion surrounding interface ideas resulted in the initial system requirements.

A semi-structured questionnaire was designed to encourage brainstorming sessions with SLTs. The SLTs were first introduced to possible ideas for interfaces which had come out of earlier work into using computer generated humour with language impaired people (Low, 2003; Manurung, Low, Trujillo-Dennis, O'Mara, Pain, Ritchie and Waller, 2004; O'Mara, 2004; Trujillo-Dennis, 2003). The interfaces presented can be described as being at both ends of the literacy spectrum, with one extremity being "highly literate" and the other being "highly pictorial".

The highly literacy based interface explores the concept of joke type and selection by offering the chance to input words and topics and choose jokes using conventional text and input mechanisms

The highly pictorial interface uses Picture Communication Symbols (Meyer-Johnson Inc, 2005) and the metaphor of a coach journey from home to "Joke school" with various pick-up points along the way.

Further requirements were gathered by introducing similar paper-based interface sketches to adults with severe communication impairments. This group of expert end-users had experience in using alternative means of communication. Paper-based interface designs were used in preference to horizontal electronic prototypes as it was important to elicit responses to the actual interfaces at this stage and not the issues surrounding the operational access of technology.

Preliminary Results

Consultation with five SLTs led to the development of initial system requirements. These included the need for:

- A use of pictorial support for literacy as many of the target users will have only emerging literacy.

- A simple progression guide. The use of a simple map using the coach journey was seen to be a useful metaphor. Additional suggestions included a selection of zones including a "joke factory" (for novel joke generation) and a "joke library" (for prestored jokes).

- The provision of levels of difficulty. An interactive road map with routes to different parts (levels of difficulty) of the map, such as a diversion to "guessing corner", was proposed.

Modified interface designs were presented to the SLTs in a second series of consultations. Feedback included extending the map metaphor to reveal further routes as the child progresses through the system.

The set of interfaces are now being transferred to durable laminated paper so that expert end-users (disabled adults) can provide feedback. This stage in the requirements gathering process necessitated the development of appropriate feedback resources. Alternative feedback options using techniques such as Talking Mats (Murphy, 1988), a technique to allow non-speaking people to provide feedback using pictorial representations of emotions, are being used to elicit detailed and rich feedback from adults who use alternative communication. The results of this process will be presented

References

Binsted, K. and Ritchie, G. (2001). Towards a model of story puns. HUMOR 14 (3), pp 275-292.

Low, A. (2003). Software Support for Joke Creation. Unpublished 4th Year Dissertation, School of Informatics, University of Edinburgh, UK

Meyer-Johnson. http://www.mayer-johnson.com/main/index.html. Downloaded 15 October 2004.

Manurung, R., Low, A., Trujillo-Dennis, L., O'Mara, D., Pain, H., Ritchie, G. and Waller, A. (2004). Interactive computer generation of jokes for language skill development. Presented at 2004 Conference of International Society for Humor Studies, Dijon, France.

Murphy, J. (1998) Talking Mats: Speech and language research in practice. *Speech & Language Therapy in Practice*, Autumn, 11-14.

O'Mara, D. A. (2004). Providing Access to Verbal Humour Play for Children with Severe Language Impairment. Unpublished Doctoral Thesis, Applied Computing, University of Dundee.

Spector, C.C. (1992). Remediating humor comprehension deficits in language-impaired students. *Language, Speech and Hearing Services in Schools,* 23, 20-27.

Spector, C.C. (1990). Linguistic humor comprehension of normal and language impaired adolescents. *Journal of Speech and Hearing Disorders*, 55, 533-541.

Trujillo-Dennis, L. (2003) An Accessible Interface for a Joke Creation Tool. Unpublished 4th Year Dissertation, School of Informatics, University of Edinburgh, UK.

Wood, L. (1998). User interface design: Bridging the gap from user requirements to design. (Florida: CRC Press).