

ACE for Art

Adapted Computer Environment for Online Art Workshop

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Overview

We envision a GROCS project that will enable individuals with tetraplegia (upper limb paralysis due to a spinal cord injury) to engage in online art collaboration. In order to participate in a visual art workshop, individuals with tetraplegia will utilize adapted technology devices appropriate to their level of physical function. Typical adapted technologies for persons with upper limb impairment include voice recognition, adapted typing aids or mouse controls, specialized wrist or arm supports, sip and puff, or head control systems. Online art collaborations have not been made accessible to individuals using these adapted technologies. The focus of our project is to design a fully accessible collage workshop. Collage is a visual format that allows for a wide variety of creative expression using the integration of mixed media including photographs, drawings, paintings, assemblage, found images, or text. The collage workshop will enable groups or individuals to showcase their finished projects online, in a gallery exhibition, or in a public mural. The online collage workshop will provide a channel for conversation and cooperation that is equally inclusive of all participants, regardless of the physical challenges presented by upper limb paralysis.

The Team

Our team has selective skills to facilitate an online art workshop for individuals with tetraplegia based on our previous experiences and areas of academic study. Clinical expertise and research knowledge in spinal cord injury is represented by Melissa's practice as a Neurorehabilitation physical therapist and her studies of upper limb sensorimotor function. Community informatics and user-centered design are represented by Brian, who works in interface design for assistive technology and peer engagement. As a student in the Master's of Fine Art program, Sadie's work in two-dimensional media addresses her personal experience of living with chronic injury.

We are currently doing preliminary research for this project as part of the University of Michigan Initiative on Disability Studies graduate seminar, Rackham 580. This includes a survey of

potential users recruited from the University of Michigan Model Spinal Cord Injury Registry and interviewing professionals in medicine and rehabilitation. These steps will allow us to identify 3—5 individuals with tetraplegia who would be willing to participate in online art collaboration. We are also submitting our proposal to the IRB—Medical review board.

The Process

We plan to use existing rich media tools as a technical platform for the development of our online art collaboration. Macromedia Flash is an appropriate medium for this project because it interfaces with adapted technologies, supports video and audio capture, provides image upload and download, and enables synchronous (peer-to-peer) activity. Building on Flash will allow us to address inherent problems in creating a universal access interface appropriate to the physical skills and adapted technologies of the participants, as well as focus on artistic development and community engagement. We will apply a user-centered design process for universal access to guide our work, and plan to build a functional prototype of the online art workshop within the timeframe of a GROCS project. We will evaluate the effectiveness and usability of this prototype and its potential impact on the quality of life of participants. If we are able to demonstrate some early success with the prototype, the online art workshop may be an attractive tool for community interest groups and rehabilitation programs.

Background

Universal access is an approach to computer systems and interface design which rejects the idea that a single interface can satisfy needs for all users (Stephanidis 2005). Instead, universal access acknowledges that, given the range of users and their characteristics and abilities, multiple interfaces or interaction design strategies may be required. Rather than developing the single best-fit interface, universal access advocates for development of multiple interfaces to a system in order to accommodate all users. In universal access, the user-centered design process is extended to address concerns of adaptability, varying scales of time and movement, respect for user tolerance, and consideration of individual needs.

When faced with limited physical or mental ability to interact with the community, individuals are forced to manage a condition in isolation. Universal access for individuals with a disability optimizes independence, wellness, and social interaction. Moreover, characteristic elements that relate to individual differences can be united and integrated in a community to overcome categorization of disability. We propose an online collaboration as a way to emphasize commonalities, rather than imposed categorical differences, between participants.

Online collaboration in visual art provides a valuable opportunity for interpersonal exchange, community outreach, and creative development. A wide range of online collaborative art initiatives currently exist, including such projects as “Art-e-bytes Virtual Gallery,” “Art-e-Mail,”

“Refluxus,” and “The Talking Heads Project” (Harris 1999). These exchanges typically involve participants developing sketches or designs, sharing and exchanging artistic ideas with each other online, as well as discussing and analyzing methods for implementing creative initiatives in the community. However, online art collaborations have not been made accessible to individuals with tetraplegia using adapted technology.

Computer access for individuals with spinal cord injury has been shown to improve satisfaction with life, function, and overall well-being (Drainoni et al. 2004, Richards 1999). Given the impairment in upper limb function and limited utility of adapted technology in online collaborative art, there is a need to determine the specific ways in which internet usage can be most beneficial to individuals with spinal cord injury. Furthermore, universal access to community informatics improves the value of social participation for all participants, not just those with disability (Clement et al. 2000).

Significance

This interdisciplinary project uniting technology, art, and rehabilitation can provide an opportunity for creative art expression as a means to enable overall independence and increase quality of life in individuals with spinal cord injury.

“Full participation cannot be achieved without eliminating environmental barriers found within architectural structures, technology, organizational policies and practices, and social attitudes and without moving toward universal design and nondiscriminatory elements” (NIH and NIDR 2006).

As the internet develops a more pervasive and important role in civil society, it is critical that software and applications move towards universal access and the integration of adapted technologies—an outcome that benefits everyone, regardless of the specific technology used for access.

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