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Cane and Able (California Lutheran University)

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Long cane attached to desk with clip

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Abstract

According to a national health study (1), there are approximately 109,000 individuals in the U.S. who are visually impaired or blind and who use a long (white) cane for independent mobility. There are many excellent programs throughout the country to teach cane and mobility skills, however none of these programs have been able to identify a solution for where these canes should be placed while the person is not using them. Canes left against tables and desks have a tendency to fall to the floor out of reach of the user, and canes that either fall to the floor or are placed there originally tend to be tripping hazards for other people. This paper introduces an easy-to-use economical solution to this problem that will keep a user's cane within easy reach and off the floor.

Introduction / Background

Our client, “Sam” is a fourth-grader who is deaf-blind. He uses a long cane to navigate his environment. This year he was mainstreamed into a general education classroom. Sam is seated in the front of the room to optimize his diminished hearing and vision, but the teacher instructed Sam to leave his cane at the door in the back of the classroom because it was a tripping hazard. Sam’s parents were outraged. “Let the sighted children watch out and step around the cane” was their response to the teacher’s direction.

Clearly a compromise was needed. In addition to other potential emergency situations, in California the possibility of earthquakes is always a concern. Sam’s parents were worried that should something happen, he would not have access to his cane and would be in danger or risk injury trying to get out of the building. If Sam was able to reach his cane, he would not have to rely on someone bringing it to him or leading him out. In addition, the teacher could then turn her attention to assisting others with limited mobility, such as another student who might have greater difficulty maneuvering around fallen obstacles in a wheelchair. Our goal was to come up with a solution to allow Sam easy access to his cane at all times while in his school setting without creating a tripping hazard for other students.

Problem Statement

Canes propped against tables or desks frequently fall. Many cane users lay them on the ground where they are in danger of being stepped on, tripped over, or rolled on by a chair. Something was needed that would secure the cane in an upright position, near the user and out of the way of traffic. To meet the needs of various users the solution should be portable, low cost, and simple to use.

Design and Development (Methods/Approach)

After several considerations of various clamps and materials, our team—comprised of educators, not engineers—decided to use a table cover clip (the type used to secure tablecloths onto picnic tables) as the base of the device. We attached a strip of felt with Velcro on each side to the clip. The clip can then be attached to a table or desk, with the cane rolled up in the soft looped side of the Velcro. The strip with the spiky side of the Velcro is placed over the cane to secure it tightly. It is very effective in holding the cane stable, and can easily be transported and attached to different surfaces as needed. (Alternately, the clip can be left on the cane while in use and attached to a table or desk as needed.)

The total cost of each prototype clip came to \$1.33. Assembly time for the prototypes was approximately 10 minutes per unit.

We were able to find one other cane clip on the market, however its selling price per unit was high (ranged from \$10 to \$20 per unit) and reviews for the product were very poor.

Our goal was to create an intuitive solution that could be easily understood and used by all age groups. We tested the initial prototype with adult cane users. In response to feedback, we changed the Velcro from being all white to one side black and the other white for better visibility to low-vision users. Also, it was noted that the clip tended to shift slightly on more slippery surfaces, so we added foam padding to the contact point which will also prevent damage to the furniture.

Evaluation and Results

We attached the cane holder to Sam's desk in the classroom. It provided steady support and kept the cane out of the way. As it is portable and easily transferred from one desk to another, it can go with him should he change seats, even for just a few minutes. It allows Sam the security of having his cane within reach at all times in the classroom, and the ability to independently move from place to place. Sam's parents and teacher find this to be a satisfactory solution.

We received requests for the clip from representatives from the Alaska State School for Deaf and Hard of Hearing, the South Carolina Commission for the Blind, Virginia Department for the Blind and Visually Impaired, DSDHH Wilson Regional Center in North Carolina, Columbia Lighthouse for the Blind (Maryland), and Georgia disABILITY Link NW. We sent prototypes to these agencies with requests for feedback.

Feedback From User Groups

The cane clips were evaluated by the organizations listed above. Feedback included the following:

"I tried it with four different O&M [orientation and mobility] students ages 6, 9, 15 and 16. The older kids LOVED the idea of clipping the cane, standing up, to their desk so they can find it quickly. They didn't care that something was attached to their cane when they walk (both are completely blind). The younger children like that their cane was close by versus in the corner by the classroom door." — *Victoria Ackerman, Alaska State School for Deaf and Hard of Hearing*

"The O&M people already want to know if you are selling them. Everyone thinks it is a great idea." — *Carol Cornett, Virginia Department for the Blind and Visually Impaired*

"It's a great idea. Everybody loved it here. The three that use the long canes were very pleased. It really is a great idea." — *Kathryn Baker, Georgia disABILITY Link NW*

"Overall, I think this cane holder is a wonderful item to use. Great idea and I'm sure many will find this very helpful!" — *Lauren Porchia, South Carolina Commission for the Blind*

Discussion and Conclusions

The usefulness of this device extends far beyond our original client Sam. User feedback was overwhelmingly positive and included ideas to expand the audience beyond visually impaired cane users. This device could be useful to any person who uses a cane-like support device. To ensure that the materials will hold up over time, we are conducting beta-testing with students from the Helen Keller National Center who will be able to provide us with valuable feedback regarding long-term daily use. This will help us determine if our materials are adequate or if we need to make substitutions for greater durability.

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