UC students design a better pill bottle for the blind and visually impaired

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A rendering of the UC students' patent pending design for a new type of pill bottle to better serve the blind and visually impaired. Credit: Alex Broerman and Ashley Ma

It's easy to see that University of Cincinnati design students Alex Broerman and Ashley Ma are on to something with their new design and prototype for a prescription-medicine pill bottle that better serves the needs of the blind and visually impaired by means of a simple and inexpensive innovation.

The design and prototype by Ma and Broerman will be on display June 5-9 at "DAAPworks," the display of senior projects in UC's nationally top-ranked College of Design, Architecture, Art, and Planning (DAAP).

In fact, the two students have filed for a provisional patent on their design – a design intended to have universal appeal but to fill the special needs for the more than 1.3 million Americans who are legally blind as well as those who suffer less-severe vision impairment. As the baby boomers age, it's expected that the number of American suffering from blindness will increase 70 percent by the year 2020.

The students' design features

• A lid on "hinges" that flips open, as lost caps are a problem for the visually impaired. And twist caps can be a challenge for the elderly. (At the same time, the students' flip lid is child proof.)

• A small rectangular bottle body, 2-by-2 inches wide and 3-inches tall, that allows a user to easily reach in and pick out a pill or two without the need to pour out a larger supply into the palm for subsequent selection of the required dosage. In addition, this "stout" design prevents the bottle from tipping over and spilling the medication.

• A distinct texture on the bottle's flip lid. There are eight distinct textures available. Each distinct texture would correspond with a different medication. Importantly, the distinct textures are not Braille, as only 10 percent of the blind and visually impaired can read Braille.

• The lid would also sport a dramatic, deep color – different medication differentiated by a different-colored lid. The reason for this is that many visually impaired individuals do have limited sight, such that they can make out a strong color that is close to the eye.

• A "fail-safe" audio button on the lid could be pressed for an audio statement on the medicinal contents.

According to Ma, 23, who is from the Cincinnati suburb of Montgomery

and who will begin work with the Los Angeles firm, Variate Labs, upon graduation in June, one key advantage of the students' design is that it is low-tech, simple and inexpensive, especially compared to currently available options for the visually impaired when it comes to solutions for distinguishing different medication.

She explained, "Options that are currently on the market are more expensive and complex, dependent on technology and requiring a more expensive outlay on the part of the end user to purchase them."

These include a wi-fi connected prescription bottle cap that glows when it's time to take medicine; however, it does not function where there is no wi-fi. Another option is a radio frequency identification (RFID) monitor that provides a vocal description of medication when a bottle is passed over it, and a third is an audio recorder that requires the pharmacist to record verbal instructions that are played back when a bottle is placed atop the recorder.

According to Broerman, 23, of Carmel, Ind., a consumer using a scripTalk device (the RFID device referenced above) would need to spend about $200 for the device.

"There are a lot of great technology-based solutions on the market already, but those are out of reach for users who can't afford the time or money to learn these systems. We interviewed a number of blind and visually impaired users of medications, and the cost for an option like the RFID device is out of reach for many of them. In fact, many of those we interviewed had to develop their own custom solutions – like rubber bands around a specific bottle – to meet their needs to differentiate medications," said Broerman, adding that these custom solutions usually didn't go far enough in meeting the needs of the users.

Ma agreed, "It was powerful to hear the stories of those we interviewed

in the early stages of the design process. These consumers, many of them elderly, are paying hundreds of dollars more than their sighted counterparts in order to aurally differentiate their medications. So the challenge becomes to create the best solution for the most number of people at the lowest cost, and we're pretty confident that we've achieved something like that with this project."

In fact, the students' design, currently titled "Inclusive Pill Bottles for the Blind," recently won a $1,000 prize in the 2012 "Innov8 For Health," a business-concept competition sponsored by a variety of regional institutions and companies.

Both add that their required UC co-ops helped hone their skills for this senior-year capstone project. Co-op or cooperative education, which was globally founded at UC more than a century ago, is the practice wherein students alternate terms in the classroom with terms of professionally paid work, such that students at UC can graduate with 18 months of paid, professional experience on their resumes.

As a UC student, Ma, a digital design major, co-opped at entertainment ad agency Crew Creative in Los Angeles; Empower MediaMarketing in Cincinnati; Apple, Inc. in Cupertino, Calif.; Smart Design in San Francisco; and design consultancy, Teague, in Seattle, Wash.

Provided by University of Cincinnati

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