

# Joystick advances independent voting

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A voting joystick created at Michigan State University could eventually enable people with dexterity impairments, senior citizens and others to exercise their right to cast ballots independently. Credit: Michigan State University

A voting joystick created at Michigan State University could eventually enable people with dexterity impairments, senior citizens and others to exercise their right to cast ballots independently.

On Nov. 5, many will vote absentee – or skip voting altogether – because of the often tedious and difficult nature of casting ballots on the current

accessible voting machines. Those machines require users with dexterity challenges to press small buttons or switches repeatedly, often requiring the help of a volunteer.

The "Smart Voting Joystick," which is comparable to the joystick used to control motorized wheelchairs, represents a vast improvement, said Sarah Swierenga, who led the joystick project as director of MSU Usability/Accessibility Research and Consulting in University Outreach and Engagement.

Some 125,000 people in the United States use a joystick-controlled wheelchair and nearly 7 million have difficulty grasping objects, suggesting a growing need for better accessible voting devices.

"Accessibility at the polling place has been a focus for years, yet it remains ineffective," Swierenga said. "The expectation among the next generation is that they're not going to put up with this the way prior generations might have. The pendulum is swinging toward inclusion on many issues, voting being one of them."

Funded by a grant from the U.S. Election Assistance Commission, through the Information Technology & Innovation Foundation, the joystick has proven successful in user testing on MSU's campus. Implementation would depend on federal approval and a manufacturer coming forward to produce the device, said Swierenga, adding that the feedback from vendors has been positive.



Matthew "Mo" Gerhardt tests an accessible voting joystick developed at Michigan State University and funded by a federal grant. Credit: Michigan State University

Matthew "Mo" Gerhardt tested the joystick and said such a device could lure him back to the voting booth. Gerhardt, who has muscular dystrophy and uses a wheelchair, has voted absentee for years after a trip to the polls required someone to help him vote and left him frustrated.

According to an April report from the U.S. Government Accountability Office, most polling places nationwide have made strides to improve accessibility, but 46 percent still have a system that poses a challenge to voters with disabilities, such as stations not arranged to accommodate wheelchair users.

"One of the highlights of being able to vote is being able to do it independently," said Gerhardt, a student adviser in MSU's College of

Natural Science. "When you vote absentee you almost feel detached. You don't have that same sense on Election Day of making a difference."

Swierenga said the joystick project highlights the collaborative nature and benefits of a major research university working to solve real-world problems. The initiative brought together a team of MSU faculty, undergraduate engineering students, rehabilitation specialists and usability and accessibility researchers and interns.

Swierenga, Stephen Blosser, Graham Pierce and Aditya Mathew worked with the engineering students to develop a prototype joystick, a project they called "Voting with Joy." The research team continued to refine the prototype, coming up with several iterations of the [joystick](#) until settling on the device design that was used in testing with people with dexterity impairments.

Blosser, a rehab engineer with MSU's Resource Center for Persons with Disabilities, said it was a delight to see such collaboration and determination, particularly given Michigan State's deep roots in focusing on inclusivity.

"MSU, since the 1930s, has demonstrated to the world the reward, for all of us, of including people with disabilities in all activities," Blosser said. "While it is a challenge, I can testify that this has been a blessing for me as well as every student and employee who witnesses this struggle."

Provided by Michigan State University

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