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Disability innovation strengthens STEM

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Individuals with disabilities face many barriers to pursuing careers in science, technology, engineering, and mathematics (STEM). In an effort to contribute fully, they have called for accommodations such as flexible schedules, remote work options, and a supportive work culture. Meanwhile, they created technologies that would allow them to work more effectively. During the COVID-19 pandemic lockdowns, many in STEM who had never needed such accommodations before came to rely on them (1). Going forward, we must remember that accommodating people with disabilities in STEM benefits us all.

People with disabilities are hindered by limited understanding by employers (2), lack of role-models (3), and limited encouragement to pursue a career and participate in STEM-related activities (4). Students with disabilities are less likely to receive financial aid and to be enrolled full time (5). Women with disabilities are more likely to be unemployed and hold lower status occupations compared to men with disabilities (6). Barriers to inclusion go beyond a lack of access to accommodations; culturally informed biases, stigma, and even self-doubt relating to disability contribute to underrepresentation and inequity.

Diversity drives innovation. Despite the challenges they have faced, people with disabilities pioneered technologies that eased the transition to a work-from-home culture. The background-blurring feature in video conference calls was developed by a deaf software engineer to facilitate lipreading (7). This tool now offers privacy to people juggling working from home and childcare or messy home settings. An engineering graduate student with carpal tunnel syndrome developed the transformative touchscreen and multi-finger gesture technology (such as two-finger scrolling) that underlies the touchscreens used on iPads and iPhones (8, 9).

As we dealt with upheaval in schedules and adjusted to home workspaces, many in STEM have leveraged mental health tools to manage pandemic anxiety (10). This experience has made us all more aware of what it's like to live and work under conditions that are not optimal. As people with disabilities have argued, we need to be flexible, to adjust our

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work expectations (11), and to be kind to ourselves. Now is the time to acknowledge that individuals with disabilities are strong and innovative contributors to society. By valuing traits such as compassion, empathy, and humility, we can empower all people in STEM, making our field better, not weaker.

We call on our institutions to harness the strengths that true diversity of ability brings, to work together toward a fully inclusive culture, to raise awareness of disability as an essential part of diversity, and to actively work toward an environment free from bias and discrimination. This requires that we unlearn harmful assumptions and learn new concepts, such as Universal Design principles (12). It will require continuous self-education and reflection as well as persistence, concrete actions, funding, and, above all, accountability. Individuals with disabilities can and should lead these efforts, which will benefit the scientific community and humanity as a whole.

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