



University of Pittsburgh



Department of Veterans Affairs

Advanced Inclusive Manufacturing: Accommodating People with Disabilities and an Aging Workforce

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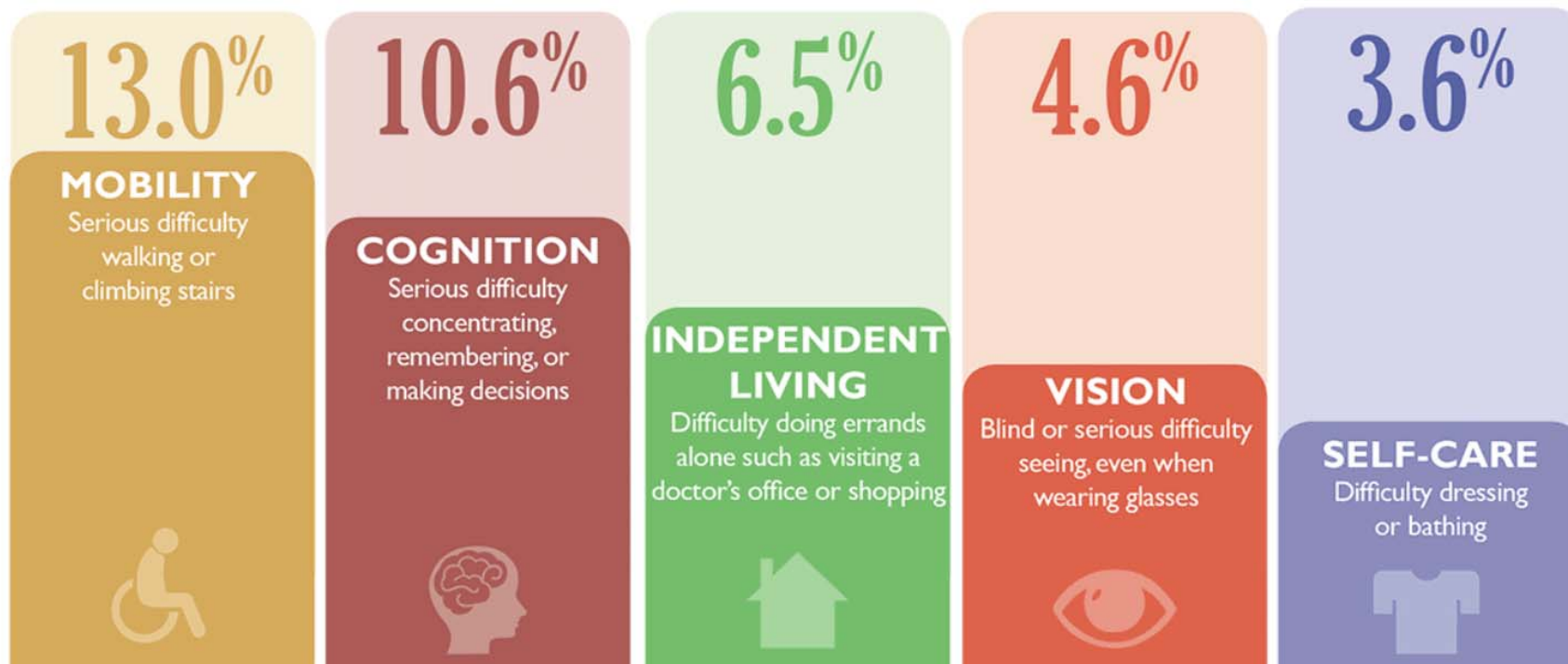
And

Rehabilitation Research and
Development Service





Percentage of adults with select functional disability types*





Some Sobering Statistics

- 22 percent of the general population has disabilities.
- National Center for Education Statistics show that about 11 percent of the undergraduates in postsecondary education in the United States have a disability.
- The National Center for College Students With Disabilities estimates that 4 percent of all faculty members have disabilities. University of California at Berkeley indicated that of 1,522 full-time faculty members, 24 — roughly 1.5 percent reported a disability.

http://www.chronicle.com/article/The-Neglected-Demographic-/240439?cid=trend_au&elqTrackId=a23899a300d74580a2ceb7527dcd7987&elq=7c2a824a04514908800549a5f030774c&elqaid=14558&elqat=1&elqCampaignId=6138



People with Disabilities Contribute to Diversity; just as other Minorities Do!

- Accommodations are not simply for people with disabilities; they are for the community, institution and employer.
 - Only 65 percent of postsecondary institutions offer students, faculty, and staff the opportunity to provide input on accessibility during project planning.
 - Only 64 percent conduct needs-assessment surveys pertaining to disability. These numbers show just how little institutions value the input of the people who know disability issues best — their own faculty members.
- Disability is an affirming identity: Disability must be a daily presence in classrooms, in communities, and in the workplace.
- The disability community is a cross section of American society, and the layered identities of people with disabilities offer an important lesson in intersectionality.



Role Model vs Professional Career

- Students with disabilities need role models with disabilities.
- Professors who have spent years lobbying for their own access (and that of others) can be proud of what they accomplished, but it comes at a cost.
 - William Peace, a disabilities-studies scholar and paraplegic, told The Chronicle three years ago, "I spend a lot of time — hours and hours — advocating for myself."
- The task of having to advocate for yourself and others can be a thankless professional obligation.
 - This may be one reason so few graduate students with disabilities pursue professional careers in academe.



Empowering People w/ Disabilities

- Ensure human rights for people w/disabilities.
- Provide education and career opportunities for people w/disabilities.
- Create a brighter future.



Fulfilling the Promise: UN Convention on the Rights of Persons with Disabilities





Importance of Assistive Technology

- Ensure people receive the most appropriate AT for them within their environment.
- Provide clinicians tools and AT users with the skills needed to achieve life-goals.
- Founded on solid scientific and clinical knowledge base.



Rory Cooper: The Man Behind the Technology - New Mobility

www.newmobility.com

You may have never heard of Rory Cooper, but if you have a disability, there is a good chance you have benefitted from an invention he's been involved with.



RESEARCH CURRENTS

Research News from the U.S. Department of Veterans Affairs

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Joint decision

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Dr. Saad Ibrahim examines Laurence Woodson at the Philadelphia VA Medical Center. Ibrahim's research has focused on why African American patients with osteoarthritis of the knee are less likely than white patients to consider joint replacements.
Photo by Jeremy Lammert



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U.S. Department of Veterans Affairs
Department of Health and Human Services

Research lab offers job training for wounded warriors

A joint research program between VA and the University of Pittsburgh that studies wheelchairs and related technology is now helping to train disabled Veterans for careers in machining.

The program is called Fabrication of Assistive Technology Program for Wounded Warriors. It's run by the Human Engineering Research Laboratories, a collaboration between the VA Pittsburgh Healthcare System and the University of Pittsburgh School of Health and Rehabilitation Sciences.

The program is being launched this fall with the help of a \$100,000 donation from Highmark Blue Cross Blue Shield.

Created by director Rory Cooper, PhD, and education and outreach project director Mary Goldberg at HERL, the program will prepare participants to pass a basic machining exam. The participants will also get on-the-job training at local companies, which could lead to permanent, full-time jobs.

To learn more about HERL, visit www.herl.pitt.edu. ★

1. Shop supervisor Garret Grindle shows Veteran Keniel Martinez how to smooth the burrs on a stainless steel plate.

2. Veterans (from left) Keniel Martinez, Shawn O'Donnell, Artem Lazeckin, Gary Rethage, and Adam Benjamin Campbell listen to Garret Grindle explain how to operate a drill press.

3. Veterans Michael Malloy and Keniel Martinez watch as Grindle demonstrates a task on the drill press.

Photos by Bill George



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AIM Theory to Practice





Inclusion of PwD and veterans

- Improve educational opportunities for people with disabilities for experiential and “hands-on” learning. Build a more diversified and creative workforce.
- Create, identify and disseminate accommodations proven to be successful.
- Change the culture of STEM education and workforce to be more inclusive.
- Incorporate the concepts of universal design into STEM classrooms and workplace to help drive innovation.
- Provide evidence to change policies for government agencies to reduce barriers such as income-caps for benefits that may preclude a student with a disability from receiving a scholarship or other benefits.



REVIEW

Full-participation of students with physical disabilities in science and engineering laboratories

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ABSTRACT

Purpose: To conduct a literature review identifying barriers and facilitators students with physical disabilities (SwD-P) may encounter in science and engineering (S&E) laboratories.

Method: Publications were identified from 1991 to 2015 in ERIC, web of science via web of knowledge, CINAHL, SCOPUS, IEEEExplore, engineering village, business source complete and PubMed databases using search terms and synonyms for accommodations, advanced manufacturing, additive manufacturing, assistive technology (AT), barriers, engineering, facilitators, instructor, laboratory, STEM education, science, students with disabilities and technology.

Results: Twenty-two of the 233 publications that met the review's inclusion criteria were examined. Barriers and facilitators were grouped based on the international classification of functioning, disability and health framework (ICF). None of the studies directly found barriers or facilitators to SwD-P in science or engineering laboratories within postsecondary environments. The literature is not clear on the issues specifically related to SwD-P.

Conclusion: Given these findings, further research (e.g., surveys or interviews) should be conducted to identify more details to obtain more substantial information on the barriers that may prevent SwD-P from fully participating in S&E instructional laboratories.

► IMPLICATIONS FOR REHABILITATION

- Students with disabilities remain underrepresented going into STEM careers.
- A need exist to help uncover barriers students with disabilities encounter in STEM laboratory.
- Environments.
- Accommodations and strategies that facilitate participation in STEM laboratory environments are promising for students with disabilities

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Barriers; facilitators; laboratory; postsecondary education; students with disabilities; STEM

Introduction

Science, technology, engineering and mathematics (STEM) fields are at risk of being unfilled due to lack of trained professionals. By 2018, 92% of STEM jobs are expected to require post-secondary

In 2014, section 503 of the Rehabilitation Act of 1973 was amended to require employers to be intentional in hiring and retaining individuals with disabilities [12]. Regulations based on the Rehabilitation Act of 1973 and the Americans with Disabilities

Evaluating and Modifying an Advanced Manufacturing Curriculum for People with Disabilities

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Abstract: People with disabilities (PwD) are two times as likely to be unemployed as the general population and are particularly not well represented in advanced manufacturing (AM) fields. This study, which features the Advancing Inclusive Manufacturing (AIM) program located at a large University in the Northeast, serves as one approach to empowering PwD by teaching them the skills needed to be successful in an advanced manufacturing (AM) career. The program components help participants identify strengths and build self-advocacy to progress to a subsequent career stage. Seventy-five percent of AIM graduates entered the workforce or continued their education while 25% are pursuing employment in the AM sector. These results suggest the AIM program may result in PwD's re-integration to the workforce and interest in continued professional development. Despite the AM focus of the AIM program, the results are still unclear whether the program is successful in sustained employment in that particular sector.