National Center for Women & Information Technology

PROMISING PRACTICES

Equal Access: Inclusive Strategies for Teaching Students with Disabilities (Case Study 3)

Recruiting and Retaining Women through Inclusive Pedagogy

K-12 Education | **Undergraduate**

More students with learning and physical disabilities are in the educational pipeline than ever before. Being aware of the issues, tools, and services for students with disabilities makes it easier for them to learn and for you to teach them. Below is a summary of tips from *Equal Access: Universal Design of Instruction*, a resource provided by DO-IT(Disabilities, Opportunities, Internetworking, and Technology) at the University of Washington. DO-IT's mission is to increase the successful participation of individuals with disabilities in challenging academic programs and careers, including science, engineering, math, and technology.

> "These communication hints will help you get started in a conversation with a person with a disability. Every situation is unique, so be flexible and willing to learn."
>
> ***Richard Ladner,*** *University of Washington Department of Computer Science and Engineering*

HOW CAN YOU ACCOMMODATE STUDENTS WITH DISABILITIES?

- Make sure that assistive technology can be made available in the computer lab.
- Invite students to meet with you and discuss disability-related accommodations.
- Ensure physical access to all facilities.
- Arrange instructional spaces to minimize distraction and maximize visibility and comfort.
- Ensure that everyone can see and use equipment and materials safely and effectively.
- Learn campus procedures for accommodation requests (e.g., arrangement of sign language interpreters).

HOW CAN YOU COMMUNICATE EFFECTIVELY WITH STUDENTS WITH DISABILITIES?

General

- Ask a person with a disability if he or she needs help before providing assistance.
- Speak directly to the student, not through his or her companion or interpreter.
- Refer to a person's disability only if it is relevant. Always mention the person first and then the disability. "A man who is blind" is better than "a blind man" because it puts the person first.
- Avoid negative descriptions of a disability. For example, say "a person who uses a wheelchair," not "a person confined to a wheelchair."
- Never interact with a person's guide or service dog without permission.

Blind or Low Vision

- Be descriptive. Say, "The computer is about three feet to your left," not "The computer is over there."
- Verbally describe all of the content presented with overhead projections and other visuals.
- Offer persons with visual impairments your arm rather than grabbing or pushing them.

Learning Disabilities

- Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities.

Mobility Impairments

- Position yourself at the approximate height of people sitting in wheelchairs when you interact.

Speech Impairments

- Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat what you did not understand.

Deaf or Hard of Hearing

- Face people with hearing impairments so they can see your lips.
- Speak clearly at a normal volume.
- Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed.
- Ask students in groups to raise their hands when they speak so that their deaf peer knows who is speaking.
- When an interpreter voices what a student who is deaf signs, look at the student, not the interpreter.

Psychiatric Impairments

- Provide information in clear, calm, respectful tones.
- Allow opportunities for addressing specific questions.

RESOURCES

Burgstahler, S. (2010). *Equal Access: Universal Design of Instruction*, University of Washington. The communication tips shared above are used with permission of DO-IT.

Sevo, R. (2011). *Basics About Disabilities and Science and Engineering Education.* Georgia Institute of Technology.

http://www.washington.edu/doit/

http://www.washington.edu/doit/Resources/technology.html

http://www.washington.edu/doit/Video/index.php?vid=12

NCWIT offers practices for increasing and benefiting from gender diversity in IT at the K-12, undergraduate, graduate, and career levels.

This case study describes a research-inspired practice that may need further evaluation. Try it, and let us know your results.

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How Do You Recruit or Retain Women Through Inclusive Pedagogy?

with Case Study 3

K-12 Education | **Undergraduate**

Physiology is important, but learning occurs within social environments, and it is mediated by the communication norms of those environments. As NCWIT Social Science Network member Margaret Eisenhart and colleague Elizabeth Finkel wrote, learning develops when one "changes from novice to expert, newcomer to old-timer, or naïve to mature practitioners in a social practice such as the activities of a science curriculum or an engineering workplace" (p. 8).

Decreased confidence among women is a frequently recurring theme in STEM and IT research. Women are more likely than men to lose confidence in their ability to complete the tasks required for earning acceptable grades, even when their performance is equal to males'. This loss of confidence can result from the suggestion that women do not fit the image of "scientist" or "engineer." We know that students and professors maintain mental models of the types of people who belong and what they can or should contribute. For example, two studies in engineering showed that despite entering their engineering majors with stronger academic preparation than their male peers, women were often considered less capable academically, or even described as "not the real engineering type." Not surprisingly, women in these studies eventually came to view themselves in the same way, resulting in either dropping out or practicing on the margins in their project groups. With repeated (and often subtle) messages that one is not like the other students—not as smart, not interested in the same activities, not a "real" computing major—it becomes difficult to imagine oneself developing the identity of a computer scientist.

Classroom opportunities for holding intellectual conversations can help to alleviate the loss of confidence among women, while allowing them to develop support groups and networks of intellectual support. Hearing other students talk about what they are learning gives women better information for making judgments about whether they in fact do belong there. And, other students hearing women's intellectual talk forces them to recognize that women are competent contributors to the intellectual enterprise.

WHERE WE LEARN SHAPES OUR LEARNING

Both the physical and the social aspects of a learning environment influence student participation and satisfaction, as well as learning itself. For example, when students' seats are bolted to the floor facing a lectern, student collaboration can be inhibited.

An important aspect of a classroom learning environment is the communication climate. When instruction is mainly lecture-based with few or no opportunities for interaction, students have little expectation that they will, can, or should learn from each other. Under these circumstances students may resist different teaching methods such as student-led discussion or small group-work. Studies show, however, that with effective teaching, small group-discussion enables students to effectively internalize and apply interpretive procedures. Hearing other students talk about the concepts being taught has many benefits. Especially important in this process are the supportive relationships and the network of learning partners students can develop. So, despite the years of socialization and expectations that students (and instructors) bring with them, new routines can quickly develop into new norms.

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RESOURCES

Eisenhart, M. & Finkel, E. (1998). *Women's science: Learning and succeeding from the margins*. Chicago, IL: University of Chicago Press.

Hiemstra, R. (1991). Aspects of effective learning environments. In R. Hiemstra (Ed.), *New Directions for Adult and Continuing Education* (pp. 5-12). San Francisco, CA: Jossey-Bass.

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