Accessible Computing Education in Colleges and Universities

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Introduction

Students with disabilities should be supported in all aspects of higher education, not only in their classroom work, but also their research, their participation in extracurricular activities, and other aspects of student life. Further, the process of obtaining access and accommodations should not add to the challenges that students with disabilities face on campus. Realizing these goals require addressing a wide range of problems and opportunities, as we outline in this white paper.

In this document, we discuss how the culture of computing as a discipline can and should change to better realize the vision of full participation by students with disabilities, as well as to promote greater contributions by computer scientists to the technology of accessibility. Our discussion is framed around this central idea of developing accessibility as a *cultural competency in computing*, rather than smaller, individual efforts to tackle inclusion within the discipline. We then frame these challenges and opportunities from the perspective of students and faculty.

In each of the following sections, we present

1. statements of what is to be achieved;
2. the associated needs, including for research;
3. desired outcomes, and how they can be assessed; and
4. needed actions.

We conclude by calling for cooperative action by computing departments, pooling work and knowledge to make progress together.

We hope that this document can support a wide variety of stakeholders, including students as self-advocates, faculty teaching staff providing accessible content and delivering curriculum related to accessibility, accessibility researchers, faculty and institutional decision makers and policy makers, and the wider computing community. By shining a light on the challenges that exist and identifying meaningful research questions we hope this can help drive the agenda of accessible computing education forward.[1]

Making Accessibility a Cultural Competency for All of Computing

In this section we introduce the overarching context of cultural competency in computing education as a way of framing needs and calls for action within the higher education setting. This framing will be considered in the context of the three primary stakeholders: the students, faculty, and the institution. While students and faculty will be discussed further in their own sections, key issues will be raised here as a precursor to that discussion and to introduce the broader agenda.

Vision

We envision cultural competency in computing education consisting of a symbiotic relationship among teaching accessibility as a topic in computing, advancing accessibility as a body of situated knowledge, and recognition of the heterogeneity among producers, consumers, learners and teachers of computational tools and products.

Problem

The current state of computing education does not include broader cultural competence in accessibility. This omission can have two primary impacts. Firstly, rarely is content on accessibility in the computing context (see e.g., Putnam et al., 2016) woven into the fabric of whole programs. Rather it is often *ad hoc* in nature, relying on the interests of individuals to embed it in their own courses. Accessibility is often viewed as a "special topic", both in education, and also in research. Secondly, supporting accessibility of the curriculum and its delivery itself is often done on an "as needed" basis. Even then, it is often subject to the efforts of individuals (see Shinohara et al., 2018). Best practice should aim to support all students at all times. While progress is being made (see Ladner, 2016), much work remains to be done.

Problem Statement: In order to promote accessibility in computing, we should
1. foster and teach an understanding of accessible design and engineering;
2. create an institutional environment where accessibility is viewed as addressing student and faculty needs both inside and outside the classroom;
3. encourage institutional-level adoption and commitment to cultural norms, technologies, and practices for accessibility and inclusion (e.g., understanding needs, being sensitive to the lived experience of disabled students and faculty, and recognition of the language, methodology and practice of unconscious bias);
4. Recognize that the needs and interests of people with disabilities are part of – not separate from – the needs and interests of people more generally.

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[1] Throughout the document we use "people with disabilities" and "disabled people" interchangeably to reflect the fact that individuals differ in whether they prefer "person-first" or "identity-first" language, respectively. The Special Interest Group on Accessible Computing within the Association of Computing Machinery (ACM) has a resource with more specific advice regarding language related to disability (see Hansen *et al.* 2015).

Barriers and Challenges: To have a real impact, reflection and systemic changes must occur at various levels, including the student body, faculty, and the institution itself. However, significant challenges exist that form barriers to addressing issues of accessibility in computing in higher education:

- Student Body
  - "Academic chauvinism" exists within the student cohort. Students should accept everyone (including oneself) in the student body, no matter their prior computing and technology experience.
  - Students should never feel ashamed due to their disability, nor should they be shamed about choices around disclosing disability to others.
  - Disability should be seen as an co-equal component of diversity and inclusion.
  - Student groups (e.g., hackathon teams, gaming clubs) and class project teams should offer accommodations to fully include disabled students as participants and leaders.
- Faculty
  - Faculty should strive to make course content and pedagogy accessible and to include accessibility-related content in their teaching. Excuses are often made for a lack of consideration of accessibility in courses. For example, some faculty staff may believe that it is too difficult to change their course. They may feel that their content can't be adapted in ways that would be more accessible or to include content regarding accessibility or inclusive practice, without requiring too much time or effort. Similarly, faculty may believe that "Accessibility can't be easily woven into my course," so accessibility content, if included, may be merely added as a token.
  - Faculty should be supported and encouraged to attain a cultural competency of accessibility in computing and to incorporate accessibility in their courses with resources and training. Some faculty staff may not have the cultural competency themselves to know what changes are needed in their courses, either to support access to the content, or the inclusion of accessibility related topics. Similarly, faculty and staff may be willing to adapt their content for greater accessibility, or include content regarding accessibility, but may lack the knowledge or understandings needed to meaningfully implement them.
  - Faculty staff should learn to Identify the many forms of ableism and how it impacts the computing curriculum and its delivery. Examples include
    - The idiomatic language used: Algorithm fitness, norms, normal.
    - Class assignments focusing on the primacy of audio/video analysis.
    - AI Data biases against particular groups re: fitness functions and training sets.
- Institution
  - Meritocracy is a complex subject and is heralded in higher education through numerous implicit and explicit norms in which students (or perspective students) must demonstrate capacity or merit. These merits should be evaluated to consider appropriateness for different groups, if expected merits are arbitrary in nature, and what other mechanisms there may be used to consider opportunity and define success.
  - Many computing programs currently have very inflexible pathways that students can take through the major which presents barriers to students:
    - Pathways into computing programs are fundamental barriers to specific groups of students. For example, those that have limited exposure to computing content (such as introductory programming) or foundation mathematics may be restricted from entering computing programs through computing competency exams. Not all students have equitable access to this prior to their enrollment in higher education.

- Institutions need to consider and create alternative pathways for demonstrating and achieving 'success,' and for providing potential students with opportunities to demonstrate ability and subject-matter competence.
- Institutions should identify means and opportunities by which diverse students can display their knowledge and suitability for entry into computing programs.
- Institutions typically have expectations for satisfactory progress by students in their areas of study, scholarships, and the like. Recognition and accommodations may need to be considered for students with specific support needs.
- Institutions have dedicated services and staff to support marginalized groups. However, inequities can exist regarding which groups are more supported and the nature of that support. This should be more equitable.
- Institutions should make it standard practice to proactively anticipate the need for accommodations at all events and educational contexts and make these available with a minimum of hassle.
- Through all of this, institutions must ensure that methods are not solely focused and based on US/Western education.
- Accreditation boards for computing programs are often focused on technology content and curriculum, but not accessibility content or accessible delivery of content. Consequently, many CS programs do not include accessibility content. Accreditation boards should cover areas regarding accessibility, and should promote, assess, and cover this area of study. While current accreditation has few explicit content requirements, it does have some in the area of computing and society (see ABET Criteria). Accessibility should be incorporated there.

Needs

We focused on two sets of needs that must be considered and investigated: research and practice.

Research needs

There are a number of research challenges that have been identified to guide researchers and practitioners in advancing accessible computing education:

- How do we close the gap between accessibility as simply an 'accommodation' to be made and ensuring equitable access to computing education, by improvements to the educational process for all students?
- How can we normalize course accessibility, minimize ad-hoc solutions, and eliminate perceptions that 'required student support' is superfluous?
- What can we do to improve evidence-based learning outcomes, rather than focus on data-driven education incentives?
- What actions can/should we take to remove ableism from computing accreditation procedures and policies?
- How can we promote sharing of inclusive practices and intersectionality among different minoritized populations in computing?
- How can we encourage computing as support for diverse communities, with participation and leadership by them, rather than something defined and shaped by others?
- What can we learn from inclusion efforts applied to other diverse populations (for example, indigenous populations or low socio-economic groups) to broaden inclusion to people with disabilities?
- What roles exist for new technology and tools in meeting the above needs?

Practice needs

There also exist a number of practical challenges for stakeholders that need to be explicitly addressed:

- Building Accessible Teaching and Learning Technologies
- How do we ensure accessibility is always embedded in educational systems, platforms, and tools from the ground up, minimizing the need for specialty design? As a broader cultural change, how can we bring this about for all systems that people in computing build?
- Connecting with External Collaborators
  - How do faculty and institutions connect with key external stakeholders to ensure needs are realized and best practice is adopted? These include
    - Parents
    - Schools / Governments
    - NGOs and other Community Organizations, for example, Autism Self Advocacy groups
- How can Informal learning opportunities (such as coding camps, bootcamps, and after-school programs) be better designed to support students and potential future students in a more inclusive manner.

Outcomes and Needed Actions

Desired outcomes exist for all three higher education stakeholder groups identified earlier:
- Students
  - Establishment of a baseline standard for all universities to support students with disabilities.
  - A recognition of the need to consider the framework of interdependence when designing accessible higher education (Bennett, et al., 2018).
    - As Bennett et al. argue, "An independence frame ... emphasizes an individual's relationship with the environment. Assistive technology (AT) devices are meant to bridge a perceived gap between disabled bodies and environments designed for non-disabled people. An interdependence frame … emphasizes the relationships between people, ATs, and environments, drawing out the roles of those with disabilities during collective work they do to create access." (see Bennett *et al.)*
  - Identifying, promoting, and advertising individual success stories, challenges experienced, and solutions realized, toward normalizing experiences of students with disabilities as part of the general study body. These can inspire and inform the next generation of students.
- Faculty
  - There is a need to "educate the educators." If every instructor feels they are alone and recreating solutions, subject to time constraints and pressures, the higher education sector will not advance the accessibility and inclusion agenda.
  - Accessibility must be integrated across classes and full programs, not just in electives or specialty courses. Concepts of accessibility need to be core for all computing students.
  - Faculty should be tasked with ensuring that all computing students graduate with some competency in creating accessible software, along with useful techniques for applying their knowledge to new projects.
- Institution
  - Institutions need their entire workforce to be comfortable talking about disability and accessibility.

- Those in institutions that are responsible for driving education practice should promote the ideals of "universal design" (asserting accessibility and inclusion as a foundational basis that drives practice), and educational equity (actively targeting systematic inequalities to bootstrap disadvantaged individuals and communities). This can lead to proactive rather than reactive accessibility.
- Ensure that Accessible computing Education is a topic widely discussed by society, not just by educators with students who have disabilities.
- Assessment and Admissions criteria must be broadened to support people from different backgrounds and underrepresented communities. This must include broadening pathways in programs such as Computer Science.
- Institutions should broadly adopt the view that accessibility is more than accommodations.

Focusing on Students

In this section, we look at the challenges of accessibility in higher education from the point of view of students.

Vision/goal

Students are supported in *all* aspects of higher education, including classes, extracurriculars, campus life, research, and to move the burden required on students to obtain access off the students.

Problem

Problem Statement: Students in higher education with disabilities in computing are not currently supported in classes, extracurriculars, campus life and research.

Barriers and Challenges: Multiple challenges exist that make it difficult for students to be in computing in higher education.

- Accommodations for students with disabilities exists, but do not fully support all aspects of education:
    - Undergraduates: extracurriculars, campus life (the undergrad experience is not just the courses you take, we need to support all these things).
    - Graduate students: conducting their own research, accessing research literature, managing unique equipment, using one-off software packages or software from package managers. Faculty being late on providing class materials to enable students or faculty to make them accessible before class.
- The process of obtaining accommodations is challenging to navigate. There is a lot of burden on the students to request and ensure that needs are met. Coming up with correct supporting documentation is a challenge and requires money to obtain – why not just provide the accommodation and only check when checking is truly necessary? (few students would ask for accommodations they don't need).
- As students transition from K-12 to higher education, they lose access to external supports and scaffolds and are required to self-advocate for their accommodations. Students should be made aware of accommodations and be encouraged to advocate for themselves and their needs.
- In some countries, faculty may have extremely limited experience with any sort of disability. This may cause them to simply deny enrollment to students with disabilities.

- People with disabilities may work at different paces than a traditional four-year degree program requires due to the barriers and discrimination faced), which can impact their self-esteem, motivation, sense of belonging and purpose, financial aid, mental well-being (e.g. stress), and mental health. Students who are thought to "underperform" should be asked what would help, not discouraged from participating.

Needs

We identified three main areas of needs to ensure that students with disabilities are supported in higher education: technology-based needs, research needs, and policies and practices needs.

Technology-based needs

- Websites and software commonly used for classes should be made more accessible (e.g. conform to WCAG guidelines)
- Accessibility checkers should be applied to all educational materials (including software) intended for use by students
- Students should be encouraged to join or create online communities to find social support from people in similar circumstances.
- Institutions should aim to help students quickly overcome barriers that they face, to the extent that they are able.
  - Institutions can move mountains when they are appropriately motivated. This should be one of those motivations (e.g. one is violating the ADA, or a letter from Education Department about violating students' right to their education).
- Actions taken by institutions to address accessibility concerns should be shared with others. Complaints made by students about accessibility should be pooled across institutions to increase leverage.
- Means are needed to obtain a data on barriers faced by students with disabilities, and share this information across institutions, while preserving privacy.

Research needs

- What are the issues that students with disabilities face in higher education?
- How can we gather and share best ways to provide accommodations to support students with disabilities?
- For students with disabilities who are not in higher education – what are the barriers that prevented them from going into higher education, and what would have helped them go into higher education?
- When resources for responding to accessibility concerns are limited, how should institutions determine how to allocate them?
- How easy or hard is it to find information about how to navigate disability in higher education online? How can we make it easier for students with disabilities to get resources online for support across different institutions?
- What are the possibilities to shift cost from assessing eligibility for supports and accommodations, to providing them? For what accommodations, if any, does access really need to be controlled?
- Can assessment practices be made more equitable, so that special accommodations don't have to be provided? For example, untimed assessments don't require any students to be given extra time.
- How can we promote sharing of inclusive practices between students? Many students with disabilities are in situations different from most others, including other students with disabilities. How can students in similar situations find each other, and share, with appropriate privacy protections?

- o Students with disabilities often develop their own ways of dealing with barriers. How can we promote sharing of inclusive practices between students and campus disability services?

Policy and practice needs
- o Where there are accessibility regulations for technology, these fall today on customers (institutions of higher education), not vendors. That is, it is generally legal for a vendor to sell inaccessible technology, but not for a college or university to buy it. Can some of this responsibility be shifted to vendors? We suggest below that cooperation among institutions of higher education, to communicate requirements to vendors, could help. This could also help when no vendor offers an accessible product for an educational or research need. Improvements in this area would have societal benefits beyond improvements in higher education, by making technology in general more widely accessible.
- o Stop requiring the use of standardized tests that have known accessibility barriers.
- o Stop requiring documentation of disability to obtain accommodations (under current law, institutions can require this, but do not have to do so.)
- o While students are enrolled, disability services pays for technology solutions. When students graduate, those licenses go away. Procedures for license handoff should be made and applied across institutions.
- o Curricula should be made more flexible, so that all students can progress without being assessed as part of a competitive, timed cohort. Today, many students, with disabilities or not, feel they "do not have what it takes" in computing, because they are compared to, and often compare themselves to, students with more experience with computing.

Outcomes
There are quantitative and qualitative outcomes that can be measured at the departmental level via surveys.
- o Outcome: Higher education meets the goals of students with disabilities and is reflective of what the students want from higher education (short-term)
- o Outcome: Students with disabilities make up the same proportion of students as in the same age group in the general population (long term).
- o Students with disabilities are not spending significantly more time advocating for their own accommodations compared to students without disabilities (short-term).

Focusing on Educators
In this section, we look at the challenges of accessibility in higher education from the point of view of educators.

Vision/goal
Educators should be empowered to provide students with disabilities the opportunity to learn and contribute to the field of computing in a manner that will foster autonomy in students' personal lives, education, and career. Creating an inclusive environment for disabled students, faculty, and staff will enrich the field with their perspectives and, along with training all computing students in accessibility, create more inclusive products and experiences. This includes

- o Supporting students, faculty, and staff with disabilities
- o Training faculty to support disabled students
- o Training all students in accessibility
- o Designing classroom methods and materials for sustainability, growth, and expectations of faculty and students with disabilities

o   Adapting quickly and contributing to the development of new practices and tools to support disabled people

Faculty should support and be supported by their ecosystem, which includes disability services, their department, and the university, whatever the level of funding or time available. Success in our goals of creating an inclusive ecosystem can make computing a model and leader for accessibility and inclusion for higher education.

Problem

Problem Statement: Faculty in computing do not have adequate preparation to support and enable individuals with disabilities in the context of teaching, research, and service.

Needs

Critical barriers make it difficult for faculty to support disabled individuals in computing in higher education. We identify critical needs related to the expertise and training of faculty, curriculum, and community.

- o   Expertise and Training
    - o   Acquiring baseline knowledge, training, and best practices in how to support people with disabilities and (on an as-needed basis) to adapt to rapidly evolving technologies
    - o   Recognizing people with disabilities as members of groups underrepresented in computing and as individuals who face discrimination
    - o   Effectively interacting with disability services and other community groups
- o   Curriculum
    - o   Choosing and designing curricula and materials for students with visible and invisible disabilities
    - o   Customizing and tailoring curricula and instruction methods to the needs and abilities of each student
    - o   Making learning opportunities accessible across in-person, remote, and asynchronous environments (e.g., Coursera, online discussion forums)
    - o   Ensuring the accessibility of software, tools and source code that students interact with as part of their curriculum.
- o   Community
    - o   Creating supportive and inclusive scaffolds, and establishing norms for these materials, in order to communicate with students about creating and adapting instruction to be more accessible
    - o   Recognizing that "poor student performance" may be caused by the inaccessibility of the learning environment
    - o   Designing all educational spaces for inclusion and accessibility to institutionalize accessibility beyond a small set of courses
    - o   Ensuring that faculty have the time and resources they need to address accessibility in their teaching
    - o   Helping faculty with disabilities to support one another in their educational mission

Opportunities

To address these needs we identified three main areas of opportunity: data-based needs, research needs, and policy and practice needs. Some questions associated with these needs have answers in the literature, practice, and collective wisdom, but we include all the ones discussed for completeness.

Data needs
- What do faculty in computing know and believe about accessibility, accommodations, and specific disabilities right now?
- What do students perceive as the primary weaknesses in faculty knowledge, attitudes, and skills related to disability?
- Disability census for students.
  - How many students in computing are requesting accommodations?
  - How can we overcome existing difficulties with gathering data about disability in higher education (e.g. https://www.washington.edu/doit/sites/default/files/atoms/files/RESPECT_2020_DisabilityData.pdf)?
  - How many students in computing identify as disabled and how does that compare to existing data about students with disabilities in post-secondary education (e.g. https://nces.ed.gov/fastfacts/display.asp?id=60, https://nceo.info/student_groups/students_with_disabilities)
- How much time do faculty spend interacting with campus disability services, considering accommodations, and acting on them?
  - How often do faculty fail to meet the requests in student accommodation letters?
  - How often do faculty engage with campus disability services web site and staff?
- What resources are campus disability services providing?
  - How do these resources align with the unique educational needs of computing?
- How can accessible curricula and practices be shared within and across universities?
  - What should be norms and standards for accessible computing education and research?
  - How often are current shared curricula accessed or used?
  - What are course ratings of classes that use or do not use accessible curricula?

Research needs
- Consider how to support everyone in the situation where being in touch with students with disabilities, or knowing that you are in touch, can be rare, so faculty often don't feel a priority
- How can we better support faculty with disabilities so they can excel and succeed in academic positions?
- What roles are there for new technology and tools in meeting the above needs?
- What kinds of teaching methods work best in classes with mixed abilities?
  - Faculty have experimented with flipped classrooms and active learning. Which instructional models are inclusive to students with disabilities and promote the greatest probability for student success?
  - Can we build AI agents to mediate between learning experiences and each student's diverse set of abilities?
- How do we make hybrid in-person/remote classes accessible?
- Remote education has the capacity to reach more students. What can we learn from how virtual conferences have been evolving that can help online education?
- How are disabled faculty currently supported by the university and colleagues in teaching, research, and service?
- What should a healthy ecosystem to support accessibility in a university look like?
  - What parts should be specific to computing? How should they interface with university resources and students?
    - Many accessibility interventions are based heavily in technology, which is a strength of computing and Information department. How can we demonstrate excellence in accessibility, advertise our successes, and inspire other departments to accommodate disabilities more quickly?

- How can we share information across departments and universities? What accessibility services can computing and Information faculty provide for the rest of campus?
- Does success in accommodating disability translate into greater student enrollment, or success, in the department's curricula?
- How do we design curricula to help students who take alternate paths through computing curricula?

Policy and practice needs

- Faculty need training in teaching, developing and adapting materials, and accommodating students with disabilities in their courses.
- We need to hold instructors at all schools accountable for providing requested support for students with letters of accommodations?
- Many of the aforementioned needs could benefit from institutional support from our field's professional societies (e.g., ACM, IEEE) and communities of practice (e.g., Access Computing).
- Faculty and staff with disabilities have their own support needs to ensure they can provide a successful and engaging teaching environment for their students (both with and without disabilities). Academic departments should develop policies to provide such support to their faculty and staff.

Existing Resources

In this section, we have listed a significant set of goals, but we do not need to start from scratch. We build on the accomplishments of those who have come before, which we (incompletely) list below.

- Accessible technology is most easily be built on top of accessible platforms. For example, Canvas and other learning management systems build in automatic accessibility checks such as reminders to add alt-text to all images. We urge instructors and staff to actively seek out accessible platforms upon which to host their learning materials, rather than starting from first principles.
- On top of this, the community should prioritize building accessibility checkers for software used to support assignments and developed by students as part of assignments and make these widely available.
- With the shift to online education methods sped up by the COVID-19 pandemic, instructors and students need on-the-spot tech support to handle technical issues that interfere with learning, e.g., inaccessible software, poor, spotty, or low bandwidth Internet connections, etc.
- Faculty may need incentives to increase the accessibility of their curricula.
  While ABET and ACM's Computing Curricula Recommendations can be a lever to help guide the way, it is not prescriptive. Faculty can be supported by student support services (e.g. Federal TRIO programs), teacher support services (e.g., Centers for Teaching Excellence at many universities), and university support programs (e.g., Clemson University hosts weekly meetings on Diversity and Inclusion). However, we encourage departments to ensure wider provisioning of disability resources to faculty and teaching staff. In addition, we urge universities to extend their yearly required employee training to include training on accommodating accessibility in education.
- There are many informal learning opportunities available to students to help them enrich their computing education, such as undergraduate research opportunities, student hackathons, online courses (such as Khan Academy online courses), online programming environments (such as Python Tutor), and coding boot camps (such as Clemson University's Python camp). However, these may or may not be fully accessible to disabled students. Faculty and students can find it helpful to reach out to existing campus student groups focused on Broadening Participation to crowdsource ad hoc adaptation to accessibility.
- In specific computing topic areas, such as AI, common classroom assignments may have inherent accessibility problems. For example, in classes on machine learning and deep learning,

image classification projects are very common, but are inherently inaccessible to blind and visually impaired students. AI for All has developed alternative learning examples, for example, based on speech, that are accessible to those students. Beyond AI, enterprising faculty may find many opportunities with low-hanging fruit in adapting existing technology for those with disabilities (e.g., online simulations).

Outcomes and Actions

Here is a list of tasks we can accomplish now.

- Train professors in Universal Design for Learning – commit to strategies that reduce need for disclosure and accommodation.
- Develop common language, expectations, training for all faculty.
- Measure attitudes of faculty around accessibility. Let's see if we can shift the needle.
- Work with the providers of widely-used resources and lists of curriculum repositories – such as
  - Engage CS Edu – to make accessible curriculum a requirement.
- Develop evidence-based practices for curriculum accessibility. Develop an evidence-based faculty development program based in a computing department.
- Scaffold remote collaboration among faculty on accessible online education.
- To support these efforts, survey existing training and as needed develop and pilot improved faculty training regarding teaching students in computing with disabilities. What trainings are out there? Who are using them? What is the evidence? Are these specific to computing?
- Identify the consensus in best practices around accessibility (e.g., purchasing, hiring, teaching, admissions). See Shinohara et al. (2018) for an example of existing work on these lines.

Here are the things that we do not yet know how to do. Research, or the development of policies and practices, is needed.

- Raise the floor of faculty knowledge. How can institutions increase the knowledge of all least knowledgeable faculty to reduce the number and severity of negative experiences among disabled students?
- Create guidelines/best practices for different classroom modalities – remote, hybrid, in-person, etc.
- Connect academic/learning goals with accessibility goals. All educational content should be assessed for accessibility (e.g. Universal Design for Learning).
- Ensure that pedagogy is evidence-based and ensure that it is material to competencies we want students to have.
- Support disabled faculty in their teaching.

Cooperative action

While institutions of higher education are very diverse, they face many common challenges. For example, all institutions need to evaluate the accessibility of software tools used in teaching or in research. Today, institutions do this work on their own. This results in a great deal of duplicated work. It also means that less well-resourced institutions often cannot do all of the evaluation they would like to. Further, when accessibility problems are found, institutions appeal to vendors separately for relief. Vendors are not always motivated to respond to requests from individual institutions and might be more responsive if it were clear that the requests reflect the needs, and the potential purchase decisions, of multiple institutions.

Another fruitful area for cooperative work is identifying research needs. Contributions to conference agendas (for example at SIGCSE and ASSETS) can be more impactful if promoted by multiple faculty working together. Organizing workshops through the Computing Community Consortium of the Computing Research Association and communicating with program officers at funding agencies are other channels for influence where cooperation can increase impact.

We feel there are many examples like these, in which cooperation among departments would be useful in hastening improvements for students with disabilities. The work of existing programs like AccessComputing could be enhanced, if more faculty, at more institutions, participated, and if that participation were marked by public endorsement and commitment by departments. Academics, including in computing fields, are strongly influenced by peer comparisons, and do not wish to feel they are falling behind the best practices in the field. We can make support for students with disabilities a visible part of those best practices.

Making these things happen will be aided by a plan for (i) enhancing AccessComputing and other programs, to create a focus for work on accessible computing in higher education; (ii) signaling the participation of departments and individuals in this work; (iii) setting priorities for the work of the group, and (iv) defining expectations for participating departments, as they address the priorities. This cooperation can also help advance the development of a culture in the field of computing at large, that accepts the needs and interests of people with disabilities as integral to the needs and interests of people generally. We believe this group can play a key role in addressing these opportunities.

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