UNIVERSITY of WASHINGTON

PAUL G. ALLEN SCHOOL OF COMPUTER SCIENCE & ENGINEERING

HOPPER-DEAN FOUNDATION COLLABORATION (HDFC): CONTRIBUTIONS FOR INCLUSION IN 2021 ANNUAL REPORT

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SUMMARY

The University of Washington Paul G. Allen School of Computer Science & Engineering participates in the Hopper-Dean Foundation Collaborative. The HDFC has three objectives: 1) cross-institutional sharing, 2) enhancing and innovating program quality, and 3) catalyzing change more broadly in the higher education system.

We were asked by the HDFC to respond to a survey intended to collect information to highlight institutional participation, contributions, dialogues, collaborations, research, learnings, and program implementation during Year 1 of the HDFC. This document includes our survey responses, as well as the HDFC Inclusive Program Design subgroup report (see appendix).

RESPONSES

QUESTION #1: Please include a summary of your institution's contributions to the objectives of the HDFC listed above, for example, this might include: sharing literature and documentation in shared google drive, evaluation rubrics, best practices in program design, resources and events, advising other member institutions, invitations and participation of other institutions in your program events and activities, interim work related to the sub-committees, etc.

CROSS INSTITUTIONAL SHARING

Staffing structure - Carnegie Mellon

We met with Ashley Patton to discuss the Diversity, Equity, and Inclusion (DE&I) team staffing structure at CMU. As a result of that meeting, we decided to formally establish and expand our undergraduate diversity & access team: we moved Leslie Ikeda, one of our staff undergraduate advisers, into a role primarily focused on undergraduate retention and we are in the process of hiring an undergraduate DE&I outreach coordinator/recruiter.

Rising into 300s - Cornell

In Summer 2020, we launched a new week-long evening program called "Rising into 300s" modeled after Cornell's CSMore summer program. The program was a pilot intended for students who we identified as at-risk of not being retained in the major and who were enrolled in discrete math (CSE 311) in Fall 2020. The goal of the program is to introduce students to concepts that are foundational to success in CSE 311 and to foster the formation of an academic and social network among students prior to starting Fall quarter. We had 11 students participate in the program pilot

and plan to offer it again in Spring 2021. We collaborated with Cornell on a proposal submission related to the two programs.

Inclusive Program Design - Cornell and Howard

The Inclusive Program Design subgroup involved Ed Lazowska (UW), Ron Smith (Howard), and Eva Tardos (Cornell). This group met several times each month over the course of the year. There was a great deal of interchange regarding the preparation for graduate studies in Computer Science provided by research-intensive vs. undergraduate-focused institutions. Both UW and Cornell hosted sessions for undergraduates in Howard's Karsh STEM Scholars program, which Ron directs. Cornell adopted UW's course syllabus inclusiveness statement.

URMC and ColorStack - Cornell

Through the Inclusive Program Design activity (UW, Cornell and Howard) we learned of Cornell's successful URMC (Under-Represented Minorities in Computing) undergraduate group, and the startup ColorStack founded by Cornell alumnus Jehron Petty to "franchise" the approach. We connected the leadership of our relatively new MiT (Minorities in Tech) undergraduate affinity group with Jehron, who provided valuable guidance.

Community-Based and Nonprofit Organizations - Berkeley and Georgia Tech

The community-based and nonprofit organizations subgroup involved Chloe Dolese Mandeville (UW), Audrey Sillers (Berkeley), and Cedric Stallworth (Georgia Tech). This group met monthly over the course of the year. We focused on collecting and sharing information and data on HDFC institutions' engagement with community-based organizations and nonprofit organizations. Additionally, this was an opportunity for our subgroup committee members to discuss our DE&I programming more broadly and share ideas for how to engage and support the students we work with. (Note that UW benefited from having two HDFC participants, Chloe and Ed, who participated in two subgroups.)

Graduate program admissions - Berkeley & Howard

UW shamelessly copied Berkeley's approach to graduate admissions. We developed a strict rubric for the graduate students who screen our roughly 2,500 annual applicants down to a more manageable 500 or so who receive serious consideration - a rubric that ensures that applicants who have excelled at institutions that did not provide the opportunity for leading-edge undergraduate research make it through the screen. We established a subcommittee of the admissions committee that looks closely at these applicants, identifies the truly promising ones, and brings each of these to the attention of a faculty member in an appropriate research area who meets with the applicant and assesses their promise. We also made significant changes to outreach and recruiting efforts for prospective graduate students, influenced by our work with HDFC and also with the FLIP Alliance. We have dramatically increased our presence at the CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing, and in addition to the outreach to Howard University's Karsh STEM Scholars program noted above, Ron Smith pointed us to UMBC's Meyerhoff Scholars Program, to which we also reached out. This year we received 7 graduate program applications from undergraduates at Howard and UMBC. Overall, we received roughly

80 URM graduate program applications in each of the past two years, vs. an average of fewer than 20 annually in the five prior years. The increased applicant pool, plus the changes in our admission processes, resulted in 11 URMs admitted to our graduate program this year (that is, for entry in Autumn 2021), vs. an average of 2 annually in the five prior years.

Focusing K-12 outreach and recruiting - Carnegie Mellon

Inspired by Carnegie Mellon, we have transitioned our K-12 outreach from "broad and shallow" to "focused and deep." In the past, our outreach efforts involved one-time light-touch interactions with dozens of high schools. Now, we have identified five high schools with a high density of the populations that we most want to attract, and we are developing strong multi-dimensional relationships with these schools. We are confident that this will pay off in the long run.

ENHANCING AND INNOVATING PROGRAM QUALITY

We have summarized our efforts related to enhancing and innovating program quality into three parts: (1) K-12 outreach & recruitment, (2) undergraduate student retention, and (3) departmental-level change.

1. K-12 outreach & recruitment

We are focusing our K-12 outreach & recruitment efforts on developing a pipeline with high schools who have a significant number of underrepresented minority, economically disadvantaged, and future first-generation college students in their high schools, where we will also focus our recruitment efforts. Here is a summary of the work that we did in the past year:

Established a relationship with TAF @ Saghalie High School

We established a relationship with TAF @ Saghalie in the Federal Way School District. Of the 572 students enrolled at TAF, 45.1% of students are female, and 54% of students are African American/Alaska Native, Black/African American, Hispanic/Latino, or Native Hawaiian/Pacific Islander. Since Spring 2020, we have hosted multiple "meet the Allen School student ambassadors" events, provided "day in the life of a computing student" presentations for 6th - 12th graders at TAF's two-day career fair, and conducted a computing student panel for all TAF students.

Established a relationship with Tyee High School

We established a relationship with Tyee High School in the Highline School District. Of the 834 students enrolled in Tyee, 79% of students are low income, 47.8% of students are female, and 71.2% of students are African American/Alaska Native, Black/African American, Hispanic/Latino, or Native Hawaiian/Pacific Islander. Our Allen School student ambassadors provide weekly classroom support for Tyee's CS Discoveries (two sections) and AP Computer Science courses. During class visits, ambassadors provide project-support for students, bring in guest speakers and panelists, and conduct activities with students. We serve 100 students per year in Tyee's classrooms.

Initiated relationships with three similar Seattle School District high schools

The Seattle School District has been harder to crack, especially as they have remained in a 100% remote-learning mode, but we have initiated relationships with three Seattle high schools that have similar demographics: Chief Sealth, Cleveland, and Franklin high schools.

Established a partnership with the Girl Scouts

We established a partnership with the Girl Scouts of Western Washington. The mission of the Girl Scouts is to build girls of courage, confidence, and character, who make the world a better place. This partnership is an exciting opportunity for our Allen School community members to empower young women in K-12 and to also expose them to computer science! The Allen School has six Girl Scout troops led by Allen School faculty, students, and staff. The troops range from kindergarten to 8th graders. The program serves 30 students per year.

Established a partnership with the UW Making Connections Program to offer a Girls Who Code Club

The Making Connections program is focused on supporting underserved students and their families in the greater Puget Sound area and seeks to increase college enrollment and career interests in Science, Technology, Engineering, and Math (STEM) fields. The Allen School is partnering with the Making Connections Program to run a weekly Girls Who Code club for high school women. The program serves 10 students per year.

Established a partnership with the UW College Assistance Migrant Program to offer a Summer Program

The Dare to Dream Academies gives students from migrant families the opportunity to spend an entire week on the University of Washington campus over the summer. This program gives students a glimpse into college life, allowing them to experience first hand what possibilities are available to them when it comes to achieving a higher education. We participated in the Science Academy in 2020, and will do so in 2021, and are currently working with CAMP to offer a Tech Academy in 2022. The program serves 10-20 students per year.

Launched a new summer program in partnership with AI4ALL

The UW Instance of AI4ALL is an AI4ALL-sanctioned program run under the Allen School Taskar Center for Accessible Technology. Our specific AI4ALL instance aims to increase diversity and inclusion in AI by making all AI4ALL curriculum accessible**.** We offered the first UW instance of AI4ALL in summer 2020. The program serves 20 students per year.

Created a new summer program called the Changemakers in Computing program

Changemakers in Computing (CIC) is a new 4-week summer program we are launching in 2021. This free program aims to serve Washington State high school students from systemically marginalized backgrounds. Students will be organized into mentee groups led by mentors who are current UW students studying tech. Mentees will develop coding skills through culturally

relevant project-based learning, learning about different areas of computing, explore the changemaking impact one can have through technology, receive support in pursuing higher education, and building community with other changemakers. The program will serve 25 students for the pilot year with the plan to expand to more students in the future.

Hired two PhD lab coordinators

In Summer 2020, graduate students requested to be a more active part of K-12 outreach. We partnered with Allen School faculty member, Lauren Bricker, to hire two graduate students to help oversee and coordinate graduate student K-12 outreach activities that are sustainable, appropriate for diverse students, and align with our departmental Broadening Participation Plan.

Targeted Direct-to-Major pathway policy change and recruitment

We made three recent changes to our admission process: we increased the number of students we admit to the major each year (from 170 in 2010 to 480 today); we increased the proportion of those students who we admit directly from high school through our freshman direct-to-major admission pathway (from roughly 15% to roughly 60%); and we increased the weight given to the personal score in admissions decisions for applicants who are not at the very pinnacle of the academic score. Given this policy change and our recruitment efforts, we increased the percentage of underrepresented minority students in our freshman class from 5% in 2018 to 12% in 2020.

2. Undergraduate Student Retention

We believe that we need to actively work toward an inclusive community where all students - from all different backgrounds and experiences - feel like they belong, can succeed, and thrive in the Allen School. Our retention efforts are focused on students who are underrepresented in the computing field; however, we believe that our retention efforts will benefit all students in the Allen School. We have categorized our retention efforts as either first year retention efforts or retention efforts that benefit all Allen School students (overall retention efforts).

Direct admit student retention data

As stated above, we made three major changes to our admission policy in 2019. All three changes were expected to increase the variability in student performance and, thus, the need for additional support for our direct-to-major students. We looked at the data for our direct-to-major students and doubled down on our efforts to support our freshman class including extending our startup program, providing a fall quarter seminar for new freshmen, launching a sidecar course for our introductory courses, and establishing relationships with campus partners who also support Allen School students (discussed below).

Extended Startup - first year retention

Startup is a cohort-based program that provides dynamic support to incoming Allen School direct-to-major admits who have limited programming experiences and/or are from low-income, first-generation and underserved communities. This year, we expanded the program from just a pre-autumn quarter course to a year-long experience. This program serves 35 students per year.

Fall Quarter Direct Admit Seminar - first year retention

The course is designed to help first-year Allen School direct-to-major students transition into UW and the Allen School in their first quarter. The seminar strives to create a community for our new students, provide practical information and connect students with resources and people. This course serves 300+ students per year.

CSE 190Y sidecar course - first year retention

CSE190Y is a sidecar course designed to provide tailored academic support for direct-to-major students concurrently enrolled in CSE 142, our introduction to CS course, in a smaller group setting. The course is 80 minutes of in-class time to reinforce concepts through lecture, practice quizzes, and collaborative problem solving as well as weekly one-on-one check-in meetings with a teaching assistant each week to evaluate student progress. CSE 190Y is intended for students with little to no exposure to computing prior to CSE 142. We piloted this workshop course in Fall 2020 and had 21 students enrolled. In Winter 2021, we offered the sidecar for students enrolled in CSE 143, our second introductory CS course, and had 13 students enrolled.

Established a partnership with the Microsoft Mentorship Program - first year retention

In collaboration with Microsoft, we launched Microsoft's new mentorship program for students who are in introductory CS courses in college. In this program, students engaged in six weekly virtual mentor sessions starting at the end of October with Microsoft employees coaching students through discussions and embedded tech activities. To be eligible, students had to be an Allen School direct-to-major student, age 18+, and just starting an introductory CS course in college. This program serves 100+ students per year.

Established a partnership with the UW Brotherhood Initiative - overall retention

The Brotherhood Initiative (BI) is a cohort-based program that provides opportunities for academic growth and leadership, exploration of intersecting identities, and support to underrepresented men of color at the University of Washington. A detailed analysis of success data for our undergraduates revealed that men of color who were enrolled in the BI were performing particularly well academically. We now work closely with the BI advisers to provide shared support for students in the BI and the Allen School.

Gen1: Affinity Group for First Generation College Students - overall retention

Twenty-percent of Allen School students are first in their family to pursue a four-year degree. We helped start and provided support to our first-generation college student affinity group, GEN1 who host a series of activities and programs in celebration of first generation college students. Activities include a National First-Gen day celebration, a First-Gen community forum, giveaways, and spotlights of our first-gen community in the Allen School.

Minorities in Tech (MiT): Affinity Group for BIPOC Students - overall retention

Eight percent of Allen School students are underrepresented minority students (a percentage that is now increasing, as noted above.) We helped start and provide support to our affinity group for students who identify as Black, Indigenous, and People of Color (BIPOC). MiT also focuses on the intersection of race and dis/ability. Also as described above, we connected our MiT leadership with the leadership of ColorStack.

BIPOC Community Conversations - overall retention

We hosted multiple communication conversations for BIPOC students this past year including a community conversation for Black students to process the events in June, a community conversation for all Allen School community members focused on supporting Black students in the Allen School, and a post-election lunch hour for BIPOC students to collectively process the 2020 election results.

Other Student Affinity Groups - overall retention

We continue to provide staff and monetary support for our two other affinity groups: ACM-W, our women's organization, and Q++, our affinity group for LGBTQ+ students.

3. Departmental Work

Climate surveys

We regularly survey our student populations to learn about our culture and where we can improve. In addition to the annual CRA Data Buddies Project, we conducted our own large climate student in partnership with UW's Center for Evaluation & Research for STEM Equity in 2019 and are determining when and how we should repeat that large exercise. Our PhD students also do their own survey annually. We have committed to transparency with reports from all these surveys available internally to all members of our community.

Strategic planning

We engaged in a year-long strategic planning process for DE&I in the Allen School. The broad participation (faculty, staff, graduate students, undergraduate students) resulted in something that was unmanageable: more than 30 pages of important principles and excellent ideas. We are building upon this effort in two ways: (1) a small group used the ideas in the Strategic Plan as the basis for a highly focused 2-page "Departmental Broadening Participation in Computing" plan, and we have engaged a DE&I consultant to assist us in refining the existing Strategic Plan into something that is manageable.

Increased funding for STARS

The STARS program has been instrumental to increasing the success of students from historically underrepresented groups in our undergraduate program. Sonya Cunningham, the "secret sauce" of STARS, is now housed in (modulo COVID) and funded by the Allen School. Eve Riskin, the faculty director of STARS, is partially funded by the Allen School. We are seeking additional funding to expand STARS enrollment.

Hiring Jan Cuny to focus on assessment

Sixteen years ago, Jan Cuny moved from the University of Oregon to the National Science Foundation to create and run the Broadening Participation programs in the Directorate for Computer and Information Science and Engineering – she is the #1 person in the nation in understanding how to bring historically underrepresented groups into the field. She has been working with us on assessment of our DE&I work and is in the process of expanding her role and time commitment in the Allen School.

Created an Allen School demographics page

We track demographic data, in addition to collecting qualitative feedback from students, faculty, and staff, to inform our ongoing efforts aimed at making computing education and the Allen School more accessible to underserved populations and building a more inclusive community. In order to increase transparency, we created a publicly available web page with our Allen School demographic data.

CATALYZING CHANGE MORE BROADLY IN THE HIGHER EDUCATION SYSTEM

SIGCSE 2020 Panel

Four of the Phase 1 Hopper-Dean institutions (UW / Ed Lazowska, Berkeley / Dan Garcia, MIT / Eboney Hearn, and Stanford / Moses Charikar) contributed a panel session to the March 2020 ACM SIGCSE Conference: "Institutions Share Successes, Failures, and Advice in Moving the Diversity Needle - Five institutions awarded grants by the Hopper-Dean Foundation to develop interventions that would advance diversity in computer science will present their initiatives and results. This panel will allow them to share what was successful, what was challenging or did not work, and how the lessons they learned are applicable to all institutions, small and large."

Panel at Tapia 2020 on increasing diversity in doctoral programs

Ed Lazowska (UW), Eva Tardos (Cornell), Charles Isbell (Georgia Tech), Valerie Taylor (University of Chicago), and Nancy Amato (UIUC) constituted a panel at the September 2020 Richard Tapia Conference on "Diversity in Doctoral Programs: Insights from the Trenches."

QUESTION #2: Have any other institutions in the HDFC utilized your institution's contributions described above? If so, please summarize below.

We have not attempted to catalog this in any methodical way. If other institutions are as careful at documenting what they have adopted from others as we have been, you'll learn the answer from them. In various HDFC settings we have discussed many aspects of our undergraduate, graduate, postdoc, staff, and faculty DE&I strategies and activities. It is through these discussions that we learned of the approach of other institutions that we adapted and adopted. Presumably the reverse is also the case.

Here are three specific examples that come to mind:

Broadening Participation Plan - outward bound

The NSF CISE Directorate now requires "Broadening Participation in Computing" plans as part of all proposals, and urges departments to have "Departmental BPC Plans" approved by the Computing Research Association's BPCnet organization - plans that indicate where faculty can tie in with their project-level plans in order to further departmental BPC objectives. UW completed its plan during the year, and shared it with the other institutions.

Extensive diversity, equity and inclusion website - outward bound

We also shared our extensive diversity, equity and inclusion website with other institutions. We are not aware of whether or to what extent this may have influenced others.

Inclusiveness Statement - Cornell

As stated in question #1 above, Cornell adopted UW's course syllabus inclusiveness statement which states:

> **Inclusiveness:** You should expect and demand to be treated by your classmates and the course staff with respect. You belong here, and we are here to help you learn and enjoy this course. If any incident occurs that challenges this commitment to a supportive and inclusive environment, please let the instructors know so that the issue can be addressed. We are personally committed to this, and subscribe to the Allen School Inclusiveness Statement.

QUESTION #3: Please include a summary of your institution's most significant learnings from engaging in the HDFC.

One of the most important takeaways from HDFC is the importance of systems change and collaboration. As Leigh Ann DeLyser stated, "diversity, equity and inclusion work requires systems change - systems yield the results for which they are designed." This work requires that we look at all of the systems that we engage in, think about how the systems are set-up, and establish values and vision for a new system. Since our departments and institutions are heavily intertwined with the K-12 system and other university systems across the United States, for our work to move the needle in the direction of DE&I we need to be working together across institutions and systems to effect change. We believe that we have embraced this perspective through our many interactions with our HDFC colleagues and have outlined some of the most important learnings we have gained from these conversations here:

From the "Cross Institutional Sharing" section you see the approaches of other HDFC institutions that we have learned from and adapted/adopted. From the "Advancing and Innovating Program Quality" section you see the vast number of changes we have made as a result of two factors: HDFC providing funding, and HDFC holding our feet to the fire. From the "Inclusive Program Design" subgroup report, which is appended, you see the emergence of a philosophy we have come to deeply embrace: that creating environments that are inclusive, welcoming and supportive is the number one issue that must be confronted; if you fail to achieve this, you will fail, period. (A simple way to view this is that a focus on recruitment without a focus on retention is a fool's errand.) We have learned from Cornell, from Howard,

from Berkeley, from Carnegie Mellon, from Georgia Tech, from MIT. We have learned from many of the guest speakers - particularly Sarah Hernandez, Beverly Daniel Tatum, and Ruth Simmons.

QUESTION #4: Have you formed any collaborations as a result of the HDFC and if so, please list and summarize.

The principal collaborations have been with Cornell University and Howard University through the extensive interactions that took place in the context of the Inclusive Program Design subgroup, and with Georgia Tech and Berkeley through the community-based and nonprofit organizations subgroup. These collaborations have been described previously.

QUESTION #5: Question for a single sub-committee representative. Please include a consolidated statement (1-2 pages) of sub-committee work in year 1 of the HDFC, activities and most important takeaway concepts, and any application of this work within your program and institutions.

UW's Ed Lazowska was the principal author of the report of the Inclusive Program Design subgroup. The work of this subgroup has influenced our program in very many ways, as described in response to previous questions. As noted in a quote below, Ed found the several-times-per-month one-hour conversations with Ron Smith (Howard) and Eva Tardos (Cornell) to be the most personally impactful element of HDFC.

That report is appended - it follows the responses to the questions that have been posed.

QUESTION #6: Feel free to add any quotes about your experience and the benefits of the HDFC and our work together for inclusion in the HDF annual report (Optional).

"Almost everyone in academia has good intentions with respect to diversity, equity and inclusion, but that's not enough. We need focused and consistent efforts, a mix of data analysis and trial project, clear-eyed assessment, and sharing across institutions. HDFC is a catalyst and a support structure for all these things." - Dan Grossman

"As someone who has put together and funded collaborations around DE&I, I've been impressed with the level of collaboration within the HDFC institutions in terms of cross-institution communication, sharing, and (from what I've seen at UW), adoption and adaptation of programs from other institutions." - Janice Cuny

"The past year was made particularly powerful and impactful for the University of Washington because of the confluence of three factors. First, our participation in the Hopper Dean Foundation Collaborative, which brought us together with Berkeley, Carnegie Mellon, Cornell, Georgia Tech, Howard, and MIT. Second, our participation in the FLIP Alliance (recently renamed the LEAP Alliance) focused on computer science graduate program diversity, which brought us together with Berkeley, Carnegie Mellon, Cornell, Georgia Tech, Harvard, Illinois, MIT, Princeton, Stanford, and Texas. Third, the Black Lives Matter movement and the events that triggered it, which made it clear to all but the

very worst among us that sitting on the sidelines was no longer an option. The power and impact was multiplied in our case because our overall DE&I activities - for undergraduate students, graduate students, non-major students, faculty, and staff - are coordinated by a tightly knit group of faculty and staff - there is no stovepiping." - Ed Lazowska

"I personally have benefited tremendously from the time I have spent with Ron Smith (Howard) and Eva Tardos (Cornell) in the Inclusive Program Design subgroup, ably coordinated by Pauline Pauline Charbogne (Station1). We met for several one-hour sessions each month throughout the year, educating one another about the crucial importance of creating environments that are inclusive, welcoming and supportive, and about ways to do so." - Ed Lazowska

"One of the most significant takeaways from the HDFC is the importance of creating mechanisms for long-term, sustained, and system-level change in the area of DE&I. As a result of the HDFC, we have a group of Allen school faculty and staff who meet weekly to discuss what we have learned from various collaborations and training - most particularly including our HDFC work - to keep us accountable for making progress in this area of work, and be responsive to the needs of our community. Additionally, we have been deeply committed to discussions in the larger group HDFC gatherings, as well as our small group work. We have accomplished the work we have outlined above because of a commitment to time, resources, and collaborative efforts and conversations within our department and among our HDFC colleagues. HDFC has given us the opportunity to learn from, form community with, and establish partnerships with folks who are working toward systems change. This has been an incredibly empowering experience, especially as a young professional in the field." - Chloe Dolese Mandeville

APPENDIX

REPORT OF THE HDFC INCLUSIVE PROGRAM DESIGN SUBGROUP

Ed Lazowska, Ron Smith, Eva Tardos

We have met several times each month over the past year, ably coordinated by Pauline Charbogne from Station1. We have deeply educated one another. This brief document is an attempt to summarize our work for others.

Overarching sentiment

We believe that creating environments that are inclusive, welcoming and supportive is the number one issue that must be confronted.

You can attempt to recruit students to your program, but if your program is not inclusive, welcoming and supportive they will leave or have a bad experience.

You can attempt to support students in your program, but if your program is not inclusive, welcoming and supportive you will be struggling against the tide.

To reflect the full purpose of our endeavor, we suggest that it be referred to as **"Creating Environments that are Inclusive, Welcoming, and Supportive."**

Recommendations to make environments more inclusive, welcoming and supportive

1. Conduct regular climate surveys, and disseminate the results.

   Climate surveys reveal areas in need of attention. Additionally, the mere act of conducting climate surveys improves the climate by telegraphing that you care.

   The Computing Research Association's Center for Evaluating the Research Pipeline (CRA's CERP) surveys undergraduate and graduate student populations annually as part of their Data Buddies Project (see https://cra.org/cerp/data-buddies/ for details, including the topics the survey addresses and an example report).

   Some colleges and universities commission additional surveys of these populations that focus particularly on issues of identity and inclusivity, with extensive open-response sections as well as quantitative question sets.

2. Have value statements that declare commitment to inclusion and support for *all* students, and that are clearly visible on the departmental website and on course websites. Here are two departmental website examples:

   https://www.cs.washington.edu/diversity
   https://www.cs.cornell.edu/information/diversity-inclusion/values-inclusion

   Here is a course website example:

   Inclusiveness: You should expect and demand to be treated by your classmates and the course staff with respect. You belong here, and we are here to help you learn and enjoy this course. If any incident occurs that challenges this commitment to a supportive and inclusive environment, please let the instructors know so that the issue can be addressed. We are personally committed to this, and subscribe to the Allen School Inclusiveness Statement.

3. Have a public "action plan" for broadening participation that identifies specific goals and responsible individuals. For example, NSF asks computer science programs to have "Departmental 'Broadening Participation in Computing' Plans" that are approved and publicly archived by the Computing Research Association's BPCnet activity; here is one such plan:

   https://drive.google.com/file/d/1TedBurV8ibTJeI30yQIoRFe643LB-m51/view

Here is a different approach - the report of a department's anti-racism task force: https://www.cs.cornell.edu/information/diversity-inclusion/antiracism-task-force-0

4. Create broad ownership, beginning with the establishment of a DEI committee that includes undergraduate students, graduate students, faculty, and staff and can be responsible for the departmental inclusiveness statement, for communication among all constituencies, for identifying areas that need attention, for leading activities, etc.
5. Create and maintain a local document on best practices for inclusive teaching, so that information relevant in the "local context" is easily accessible. Here is an example: https://docs.google.com/document/d/15egU3IYmgd8c2exue3G7oqpoSQmOVYRumu_Nq7PnkCQ/edit

6. Institute "on-ramp" seminars for new students, and training seminars for teaching assistants, that – among other topics – emphasize inclusivity and explore issues such as imposter syndrome, stereotype threat, and unconscious bias. The program would introduce diversity, equity and inclusion as institutional and program values. No student would be able to begin the program, and no student would be able to serve as a TA, without participation. Here are two examples of TA training - they could use beefing up but are steps in the right direction:

   https://courses.cs.washington.edu/courses/ta-training/schedule/
   https://www.cs.cornell.edu/~dfan/csTaTraining2016ASEE_StLawrence.pdf

7. It would be worthwhile for "the community" to engage a social scientist or a social science survey organization to design and implement a survey to collect information from URM who have completed their studies. The focus of the survey would be to have respondents report how they were treated on a number of indices while pursuing their education. The survey would also provide respondents an opportunity to suggest ways in which they believe improvements could be made.

Recommended reading

Co-Creating the Future through Socially-Directed Science and Technology
Pedagogy Workshop January 23-26, 2020
Station1: Education at the Frontiers, Session 2, page 39-68.
(Use as a template for the design of the Workshop/Boot Camp/Retreat)

Beverly Daniel Tatum, *Why Are All the Black Kids Sitting Together in the Cafeteria? – And Other Conversations About Race*: https://www.amazon.com/Black-Kids-Sitting-Together-Cafeteria-ebook-dp-B071KSKT3K/dp/B071KSKT3K

"Fostering an Inclusive Classroom," a short article from *Inside Higher Ed*: https://www.insidehighered.com/advice/2020/08/05/small-steps-instructors-can-take-build-more-inclusive-classrooms-opinion

National Center for Women & Information Technology, "11 Ways to Design More Inclusive Academic Websites": https://www.ncwit.org/resources/ncwit-tips-11-ways-design-more-inclusive-academic-websites

National Center for Women & Information Technology, "How Do You Retain Women Through Inclusive Pedagogy?": https://www.ncwit.org/resources/how-do-you-recruit-or-retain-women-through-inclusive-pedagogy/how-do-you-retain-women

Computing Education Research Blog (Cynthia Lee), "What can I do today to create a more inclusive community in CS?": https://computinged.wordpress.com/2015/09/28/what-can-i-do-today-to-create-a-more-inclusive-community-in-cs-guest-post-from-cynthia-lee/

Communications of the ACM (Mark Guzdial): "3 Proposals to Change How We Teach Computing In Order to Reduce Inequality": https://cacm.acm.org/blogs/blog-cacm/246550-3-proposals-to-change-how-we-teach-computing-in-order-to-reduce-inequality/fulltext?mobile=false

The Years That Matter Most (Paul Tough): https://www.paultough.com/books/years-that-matter-most/

Student Retention Literature - Tinto's Model (Cornelia Thinks): Cornelia Thinks: https://corneliathinks.wordpress.com/2016/09/20/tintos-model/

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