

Promoting Gender Diversity in Computing Fields

Women are underrepresented in the computing fields at a rate like no other field. It is also one of very few fields that continues to decrease in the representation of women. There are many theories as to why this is the case. Some of these include:

- The stereotype of what computer science and the related fields actually are.
- The lack of encouragement through K-12 education.
- The environment of the departments (both academic and industrial) – especially feeling like they don't belong because they see few other students/workers who are like them
- The lack of role models and mentors

This lack of representation combined with the estimated reports of the number of workers that will be needed in computing fields in the near future make this an issue that must be addressed.

Sampling of the Planned Programs of the Center

- **Outreach Programs** to improve the pipeline
 - Bring the many outreach programs targeting girls and women in computing under one umbrella to make them more effective and efficient (Comp Sci Connect, CyberSTEM Girls Camp, WIKI'D Girls, etc.)
 - Summer Programs – both overnight and day camps to introduce girls and young women to computing
 - School Year weekend workshops
 - School Year after school programs in their schools
- **Inreach Programs** to improve retention at the University
 - Scholarships for University Students in Computing fields with a community service requirement
 - Speaker Series to encourage women to stay in Computing Fields (expanded on below)
 - Training to improve presentation skills and broaden computing area exposure
- **Space to Gather**, meet with others and plan events
 - Lounge area for gatherings and sharing of ideas
 - Director and Associate Director offices so advisors and mentors are always available
- **Speaker Series** to make them aware of breadth and options
 - Women from Industry
 - Women from Academia
 - And Others working to improve the pipeline
- **Workshops** to expand horizons

General Structure

The plan for the Center will be to have a multi-pronged approach each addressing some of the possible explanations for the lack of diversity in computing fields. Each of the prongs is designed to benefit from and support the others. The three prongs will address recruitment of students into the computing pipeline, retention of current students, and research needed to improve programs in the first two.

The first prong, programs to improve the diversity of the pipeline, will include both programs that reach into the schools and programs held on the university campus. At UMCP we have several successful programs of both types, but they have not been housed under one umbrella and therefore could be more efficient by sharing of information and resources. The current camps have different foci, but share many of the same goals including a common theme that we encourage school age children to see that many of the assumptions they may be making about computing are not true. The camps differ in age range of participants, length of commitment, actual content and location/structure. Sharing some of the training for the college student leaders and sharing the equipment/logistics costs will lower the expense of the camps. Sharing ideas in both content and pedagogy strategies will raise the quality of the camps. These two benefits will allow us to expand all of the programs and, therefore, reach more students with high quality options.

The second prong, programs to improve retention of women already in our program, will have several parts each of which counter one of the possible explanations for the current lack of retention. The center will provide a scholarships tied to service to students who are interested in improving the computing pipeline. This service requirement will help the programs listed above improve, but it will also cause the college student leaders to be more vested in the field, in the department and in the community in addition to broadening their own views of computing. The speaker series will continue to eliminate the misconceptions of computing some of them still carry. And the community, built by having a common goal and through the dedicated gathering place, will improve the visibility of other women and, therefore, make it appear as if there is a “critical mass” in the department. The comraderie built between the students and with the staff has been shown to have significant impact on retention.

The third prong, research, will give us a deeper understanding of the effects of these efforts. Right now, there are many programs, but most are too small to gain any real understanding of the impact. With the programs operating under one umbrella, it will be easier to determine what features are making the larger impacts on both recruitment and retention. Data will be gathered from the programs and results will be published, shared and applied.