

## **Interactive Panel on Advocacy Tips: an Initiative to Provide Individuals the Tools to Advocate for Women and Underrepresented Minorities**

### **Dr. Adrienne Robyn Minerick, Michigan Technological University**

Adrienne Minerick received her M.S. and Ph.D. from the University of Notre Dame in 2003 and B.S. from Michigan Technological University in 1998. Adrienne's research interests include electrokinetics, predominantly dielectrophoretic characterizations of cells, and the development of biomedical micro-devices. She earned a NSF CAREER award, has published research in the Proceedings of the National Academy of Science, Lab on a Chip, and had an AIChE Journal cover. She is an active mentor of undergraduate researchers and co-directed an NSF REU site. Research within her Medical micro-Device Engineering Research Laboratory (M.D. – ERL) also inspires the development of Desktop Experiment Modules (DEMOs) for use in chemical engineering classrooms or as outreach activities in area schools (see [www.mderl.org](http://www.mderl.org)). Adrienne has been an active member of ASEE's WIED, ChED, and NEE leadership teams since 2003 and during this time has contributed to 36 ASEE conference proceedings articles and 6 educational journal publications.

### **Dr. Roger A. Green, North Dakota State University**

Roger Green received the B.S. degree in electrical and computer engineering and the M.S. and Ph.D. degrees in electrical engineering from the University of Wyoming in 1992, 1994, and 1998, respectively. During his Ph.D. studies, he also obtained a graduate minor in statistics.

He is currently an Associate Professor with the Electrical and Computer Engineering department at North Dakota State University, where he teaches courses in signals and systems, digital signal processing, random processes, communications, controls, embedded systems, and others. His main research interests include digital and statistical signal processing, time series analysis, spectral and time-frequency analysis, array processing, real-time systems, and data adaptive techniques.

### **Dr. Canan Bilen-Green, North Dakota State University**

Canan Bilen-Green is Vice Provost for Faculty Advancement at North Dakota State University. She is also Dale Hogoboom Professor of Industrial and Manufacturing Engineering and PI of the ADVANCE Program at North Dakota State University. She holds Ph.D. and M.S. degrees in Statistics from the University of Wyoming and a M.S. degree in Industrial Engineering from Bilkent University.

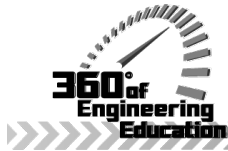
### **Dr. Kristen P. Constant, Iowa State University**

Professor Constant is Wilkinson Professor of Interdisciplinary Engineering and Chair of Materials Science and Engineering at Iowa State University. She has been an advocate of broadening participation in engineering and engineering education since joining ISU in 1992, and has been involved in ISU's NSF ADVANCE program since 2006.

### **Dr. Beth M Holloway, Purdue University, West Lafayette**

Beth Holloway is the Director of the Women in Engineering Program at Purdue University, where she initiates, manages, evaluates, and promotes comprehensive activities and programs that recruit and retain women in engineering from Kindergarten through faculty ranks. She is also the Director of Student Success for the College of Engineering at Purdue University. Holloway received both B.S. and M.S. degrees in Mechanical Engineering and a Ph.D. in Engineering Education, all from Purdue University. Her research areas include women and leadership, particularly in male dominated careers; differential retention issues for women across engineering disciplines; and engineering admissions practices.

She is currently the Program Chair of the Women in Engineering Division for ASEE. She served on the ASEE Diversity Committee from 2010 – 2012. Holloway was also president of WEPAN (Women in Engineering ProActive Network, [www.wepan.org](http://www.wepan.org)) in 2006-07, served on WEPAN's Board of Directors from 2005 – 2008, and was the co-chair of the 2003 WEPAN National Conference.



**Dr. Sandra D. Eksioglu, Mississippi State University**

Sandra D. Eksioglu is an Associate Professor in the Industrial and Systems Engineering (ISE) Department of Mississippi State University. She received her Ph.D. from the University of Florida in 2002. She joined the ISE faculty in August 2005. Sandra's research interests include supply chain optimization, logistics and supply chain management, transportation systems, operations research, network optimization, and systems simulations. Sandra is an active member of INFORMS, IIE and ASEE. She served as an officer for the Women in OR/MS Forum. She is currently an officer of WIED. Many of the students that she has mentored and advised during her career are girls pursuing an undergraduate or graduate degree in industrial engineering

**Dr. Debra M. Gilbuena, Oregon State University**

Debra Gilbuena is a postdoctoral scholar in the School of Chemical, Biological, and Environmental Engineering at Oregon State University. Debra has an M.BA, an M.S, and four years of industrial experience including a position in sensor development. Sensor development is also an area in which she holds a patent. She currently has research focused on student learning in virtual laboratories and the diffusion of educational interventions and practices.

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**Abstract:**

Research and recommendations have shown that advancements within a minority group benefit greatly from majority group involvement. With this philosophy in mind, the Women in Engineering Division (WIED) has facilitated and sponsored the development of a website (<http://wied.asee.org/AdvTips.html>) with the content largely driven by partnership with NSF ADVANCE [Institution]. This panel brings together researchers, advocates, and facilitators at various levels of academia to discuss the development and future of the Advocacy Tips Initiative. This paper augments the panel by providing a) a brief review of prior research into disparities in STEM faculty, b) successful examples that facilitate dialogues and improve workplace climates, c) information for an individual or administrative advocate, and d) strategies to gain awareness and wider adaptation of Advocacy Tips.

**Motivation for Advocacy Tips for Women and Underrepresented Minorities:**

The following motivational hail, entitled, “A National Imperative,” introduced the Advocacy Tips to the WIED membership.

*The next time you're having coffee with colleagues, ask them what they consider as the top areas of critical national importance, particularly when taken from the perspective of science, technology, engineering, and mathematics (STEM). I'll lay odds that you'll hear many predictable responses from categories such as energy, sustainability, climate change, population, health care, education and the like. I'll also lay odds that few responses, if any, will relate to gender equality and the status of women, particularly when asked of your male colleagues. That gender equality can remain unmentioned as an issue of crucial national importance is, to put it mildly, curious. Who wouldn't agree, for example, that it is more difficult to solve complex problems if using only about 60 percent of the available resources and talent? Yet this is precisely the situation that occurs day in and day out when only 20 percent of our engineers are women. Despite an abundance of research literature, seminars and training by renowned experts, and the focused attention of national organizations and initiatives such as ASEE WIED and NSF ADVANCE, gender equity still fails to rise to our collective and day-to-day national consciousness.*

*While progress toward gender equality has been and continues to be made, it seems to follow a sporadic and frustratingly slow pace. More often than not, advancement comes, if at all, through the efforts of women rather than the men who constitute the gender majorities typical of STEM institutions. Gender inequality disadvantages women, certainly, but it also hurts men, reduces the*

*effectiveness and competitiveness of businesses and organizations, and diminishes our nation's capability to address and solve global challenges. Quite simply, this makes gender equality a national imperative of primary importance.*

*Particularly in the male-dominated fields of STEM, gender equality requires the cooperation, commitment, and active participation of men. This focus on men has been the cornerstone of [Institution] Advocates and Allies program, initiated through a National Science Foundation (NSF) ADVANCE Institutional Transformation grant (HRD-0811239). From its inception in 2009, I have served with other [Institution] FORWARD Advocates to: learn about gender equality (or lack thereof); inform men about, among other topics, gender discrimination, implicit bias, and male privilege, and then equip those men with skills and individual actions to help promote gender equity; and effectively advocate on behalf of my female colleagues. In the coming months, I shall share a series of tips from the [Institution] FORWARD Advocates group to help promote gender equity. I hope you will read and share these tips, particularly with your male colleagues. In the meantime, I encourage you to take your colleagues to coffee, find what they view as the top areas of critical national importance, and then ask them if they think a 60 percent increase in our resource and talent capability to tackle those challenges is worth a little personal commitment and future effort. If so, invite them to join us as we work together towards the goal of gender equality.*

### **Lessons Learned from the Literature:**

Like most initiatives to address the underrepresentation of women and minorities in STEM, the advocacy tips are drawn from a rich body of literature and evidence-based experiences. In a recent essay, Acker [1] reflects on 30 years of theorizing and researching gendered substructures enacted in organizations and, while recognizing that recent research provides clearer understandings of why women enter and/or remain in academia, also acknowledges that “a number of issues about how to think about gender inequalities remain unresolved” (pg. 214). Acker further notes that white men generally dominate top organizational positions and that, despite progress in hiring practice and promotion, “inequality regimes continue to be relatively resistant.”

Many efforts to address gender equity are structural and top-down in nature. Such efforts, while necessary to affect institutional transformation, can lack the dynamic bottom-up elements that better address the day-to-day experiences of individuals within institutions and that engage individuals with social power as change agents and social justice allies. Broadly, social justice allies are “members of dominant social groups who are working to end the system of oppression that gives them greater privilege and power based on their social-group membership.”[2] Attention to men's roles as gender and underrepresented minority allies is on the rise in US corporations, non-profit business venues, universities, and internationally as well.

The proliferation of online gender equity advocacy organizations oriented to men testifies to an expansion of interest in utilizing men as gender justice allies (see, for example, *Men Advocating Real Change* (MARC; <http://onthemarc.org/home> or *White Men as Full Diversity Partners*, <http://wmfdp.com>). A review of the literature in a variety of disciplines exploring men's engagement in advocacy efforts and functioning as gender and minority equity allies is provided in prior publications [3, 4].

It is in this context and with this literature in mind that we develop and distribute advocacy tips, which target a broad audience and particularly include dominant majority groups, such as white males. Such efforts are particularly important to academia, where there is little history or research specific to intentionally engaging university male faculty in gender equity efforts. [4]

### **History of the Advocacy Tips Initiative:**

While land grant and other universities with substantial programs in STEM fields are known to have lower proportions of women faculty, the 2006 American Association of University Professors (AAUP) data [5] placed [Institution] second from the bottom of 1,445 U.S. universities for women in faculty ranks. The national averages for percentage women across assistant, associate, and full professor ranks were 45%, 31%, and 24%, respectively. While these numbers were lower at doctoral institutions (41%, 26%, and 19%), [Institution]'s profile revealed significantly smaller percentages of women at the advanced ranks. Further, the pattern was not confined to STEM departments but prevalent across the institution including academic administrative leadership. Not surprisingly, key policies and procedures to address very low participation of women in faculty ranks were not in place, and climate surveys indicated significantly less satisfaction among women faculty compared to their male colleagues.

In 2008, [Institution] received an NSF ADVANCE Institutional Transformation grant [6] to seek a transformation that is "deep and pervasive, affecting the whole institution, by altering the culture of the institution by changing underlying assumptions and institutional behaviors and processes affecting the whole institution" as described by Eckel et al [7]. The ADVANCE project spurred coordinated programming aimed towards recruitment, retention, and advancement of women faculty, improved campus climate, and expanded leadership opportunities. Overall indications are that intensive efforts on multiple fronts have shown positive results. There are more women in faculty ranks and academic administrative positions, and measures of institutional climate change continue to show progress. In addition to multiple interventions, the kind of transformation sought required engagement of men – not just as participants, but also as facilitators, planners, and leaders guiding the work of NSF ADVANCE at [Institution].

A unique component of the ADVANCE project at [Institution] is an undertaking that intentionally engages male faculty in creating a better and more supportive

workplace for women faculty [8]. The [Name] program is based on the knowledge that in traditionally male dominated disciplines including STEM and in male-dominated institutions, men are critical partners. With that dynamic in mind, the [Name] program seeks to develop a critical mass of faculty men who can serve as advocates and allies for their female colleagues by bringing awareness; engaging men in solution-building; providing ongoing training and discussion; increasing empathy and understanding of impact; providing opportunities for men-only dialogues; acknowledging the costs that men face; and encouraging reverse mentoring and inclusiveness. The mission of the [Name program] is to introduce faculty men to skills and strategies for bringing about positive change in their departments and colleges and to use that knowledge to build a supportive network of male allies for women faculty.

This two-part program is composed of Advocates, senior male faculty who educate themselves about issues of gender quality, and Allies, male faculty whom the Advocates train to be proponents for gender equity in their departments. Advocates intentionally develop and enhance their own understanding of gender bias and its impact on the academic careers of women faculty. Additionally, these Advocates have developed and regularly offer Ally training. They also schedule informal meetings as follow-up to the initial Ally training to discuss with Allies situations that arise in departments and possible ways to address those situations.

Allies are faculty men who identify themselves as allies of faculty women. They participate in the Ally training and sign an Ally Agreement, a brief statement formalizing their commitment to institutional transformation for gender equity. Allies are expected to take action primarily within their departments, such as: speaking up at meetings, inviting female colleagues to collaborate on research, talking about teaching and observing each other in the classroom; serving on committees so their female colleagues do not have to; and making sure social events are open and inclusive. To date at [Institution], 27 faculty men have served as Advocate and over 170 (42.5%) tenure-track faculty men have attended Ally training and signed an Ally agreement. The uniqueness of the Advocates and Allies program has attracted the attention of other institutions including invitations to provide training for their faculty men and share information about the program and requests to use the materials developed in and for this program.

The NSF ADVANCE //Institution/Program// presented their progress and successes as the ASEE 2013 conference [3]. The presentation spurred a number of conversations with the audience, which carried over once the session ended. An idea developed from these discussions to regularly deliver advocacy tips via the Women in Engineering Division newsletter. This dissemination mechanism was intended to reach a broader and larger group. ASEE's Diversity Committee has also added a link to the WIED Advocacy Tips webpage and plans are underway to regularly update the Engineering Dean's Council with updates to the Advocacy Tips. Thus far, the Advocacy Tips have been developed by the [Institution] ADVANCE team's PI, but the process is being opened to include tips from additional sources.

## **Examples: The First Few Advocacy Tips:**

*Advocacy Tip #1:* Many men, particularly those in STEM, lack knowledge of gender equality issues, research, and literature. Furthermore, lack of knowledge is a key force that undermines men's engagement as gender equality allies [9, 10]. Our first tip, therefore, is to encourage men to do some reading. The web-available report "Engaging Men in Gender Initiatives: What Change Agents Need to Know" by Jeanine Prime and Corinne Moss-Racusin is a good place to start [9, 10]. We recommend many other relevant and interesting reading items [9-27]. Knowledge is the foundation for engagement and action.

*Advocacy Tip #2:* In addition to a lack of knowledge (see Tip #1 above), apathy and fear are also key forces that undermine men's engagement as gender equality allies [9]. While tricky to overcome, apathy can be reduced when an individual discovers that a topic is personally relevant. As our second tip, we encourage everyone to take one or more implicit association tests (AIT), particularly the Gender-Science and Gender-Career AITs, all of which are available at <https://implicit.harvard.edu/implicit/>. Taken in a private setting, these enlightening tests can help individuals recognize personal biases, often unconscious, that may contribute to gender and other inequalities. Recognition is an important step to reducing or eliminating bias.

*Advocacy Tip #3:* Previously (see Tip#2 above), we introduced the implicit association test (AIT) as a way to help make gender equality personally relevant. To competently serve as a gender equality ally, it is equally important to establish institutional context and relevance. As our third tip, we suggest that individuals investigate gender representation within their own department or program. What percentage of employees or faculty are women? What percentage of clients or students are women? Are there differences in retention between men and women? One can gain valuable insight and context by comparing institution or department data to the national data using, for example, Brian Yoder's "Engineering by the Numbers", available from the American Society for Engineering Education (ASEE) at [www.asee.org/papers-and-publications/publications/11-47.pdf](http://www.asee.org/papers-and-publications/publications/11-47.pdf). It is easier to plan a path forward when you know where you are currently at.

*Advocacy Tip #4:* Even with the progress being made, women remain underrepresented in many departments, especially those in STEM (see Tip #3 above). To improve the gender balance within such departments, it is crucial to both recruit and retain women. As our fourth tip, we encourage men to volunteer to serve on departmental and university committees, particularly search and promotion and tenure committees, with the specific purpose of being an ally for gender equality. Men can be uniquely effective in voicing gender-related concerns during committee discussions since they are less likely to be perceived as acting in their own self-interest. Through intentional committee service and effort, men can be positively impact the recruitment and retention of women.

*Advocacy Tip #5:* When men serve on committees with the purpose of being an ally for gender equality (see Tip #4 above), they will likely encounter various forms of resistance, whether intentional or not. Attempts to incorporate diversity as a position requirement, for example, may be challenged when committee members erroneously assume that diversity means lower standards. Well-intentioned faculty who view themselves as unbiased may not recognize unconscious bias and its impact on committee discussions and outcomes. Despite much evidence to the contrary, some still view bias and bigotry as a thing of the past. Homogeneous groups may use a “good fit” criterion during candidate deliberations, not recognizing that such a criterion is likely to keep the group homogeneous. As our fifth tip, we recommend men learn to recognize common forms of resistance and plan effective ways to respond. JoAnn Moody’s book “[Faculty Diversity: Removing the Barriers](#)” [28] provides an excellent discussion of resistance and offers practical advice on how to effectively handle resistance and push back.

### **Panelist Perspectives:**

The panel will begin with each panelist giving a brief introduction to themselves and their role(s) advancing women or minorities in engineering at the K-12, undergraduate, graduate, postdoc, faculty and administrative levels. Panelist perspectives and experiences facilitating dialogues and improving workplace climates will be discussed during the session. However, this paper compiles these individual perspectives to provide a lasting resource for those unable to attend and future interested individuals.

Panelist Question 1: What is your current position and what role(s) have you led or participated which have advanced women or underrepresented minorities?

Panelist 1: I’m an Associate Professor in Chemical Engineering at [Institution]. I’ve been active in the Women in Engineering Division for over 7 years and have contributed a couple of proceedings papers/presentations to the division. I’ve served as the WIED representative to the ASEE Diversity Committee for the last two years. At [Institution], I serve as a co-director of the Women in Science and Engineering (WISE) faculty group, which facilitates informational/development sessions and networking opportunities at [Institution].

Panelist 2: I’m an Associate Professor in Electrical and Computer Engineering at [Institution]. From its inception in 2008, I have been an active member of [group name], which is a group of male faculty dedicated to effecting departmental and institutional change in support of gender equality, particularly in the STEM disciplines. As part of this group, I regularly train men, both on- and off-campus, to better serve as gender equity allies. Additionally, I am a long-term member of the Commission on the Status of Women Faculty, a committee that works to revise or draft gender-equitable



policies at [Institution]. More recently, I have been contributing to the Advocacy Tips published in the ASEE WIED newsletter and website.

Panelist 3: I am interim chair and professor of Industrial and Manufacturing Engineering, Vice Provost for Faculty Advancement, and PI of the ADVANCE Program at [Institution]. Since 2001, I have also been the faculty advisor to the student chapter of the Society of Women Engineers at [Institution]. In all these roles, I have encouraged and participated in a variety of activities designed to recruit, retain, and advance more women in engineering.

Panelist 4: I'm a department chair of Materials Science and Engineering at [Institution]. I've been active in WIED for a number of years in a number of roles, currently serving as [zzzz]. At [Institution], I was involved for 6 years in an NSF ADVANCE Institutional Transformation program where we focused on using collaborative transformation methods to develop departmental culture, policies and practices to improve recruitment, retention and advancement of women faculty.

Panelist 5: I'm the Director of the Women in Engineering Program and the Director of Student Success in the College of Engineering at [Institution]. I've been active in the Women in Engineering Division for a number of years, and served on ASEE's Diversity Committee for a two-year term. I am also a past president of WEPAN (Women in Engineering ProActive Network) and was on the organization's Board of Directors of WEPAN for three years. I am also the advisor to the [Institution] student section of the Society of Women Engineers.

Panelist 6: I'm an Associate Professor in Industrial and Systems Engineering Department at [Institution]. In the last 3 years I have been serving as the web master for the Women in Engineering Division. In the past, I have served as an officer for the Women in ORMS (WORMS) forum of the Institute for Operations Research and the Management Sciences (INFORMS). During my career at [Institution] I have worked closely and mentored a number of undergraduate and graduate female students. I have participated in a number of outreach K-12 activities, organized by the XXX College of Engineering, which were focused on introducing middle and high school girls to engineering.

Panelist 7: I'm a Postdoctoral Scholar in the School of Chemical, Biological, and Environmental Engineering at Oregon State University. In 2013 I was elected as the assistant Webmaster for the Women in Engineering Division and really enjoy the role. As a graduate student and postdoctoral scholar, I have mentored multiple female students at various educational levels (high school, undergraduate, graduate). In addition, I have volunteered with outreach activities that give K-12 students an opportunity to explore engineering, such as the weeklong Summer Experience in Science and

Engineering for Youth, which focuses on giving girls and minority high school students hands-on engineering laboratory experience.

Panelist Question 2: From your perspective, what is the greatest challenge ahead for diversifying STEM in the academy?

Panelist 1: The largest challenge is educating the general populace on the societal impact and value of STEM. We need to convey how FUN and FEASIBLE it is to envision, create, and implement engineering solutions to global challenges. Next, we need to shed the elitist aura around STEM and illustrate that it is a skill that can be developed if practiced. Once this value is realized, STEM professionals will be respected and our next generation will want to be like them, thus changing the demographics of our professions.

Panelist 2: I do not believe there is a single greatest challenge when it comes to the complex problem of achieving diversity. Different institutions and groups, different locations and times, all require different approaches to be most effective. Diversity requires intentional, multifaceted efforts with broad participation. From this perspective, then, it is a significant challenge to identify and implement situation-appropriate actions and interventions, and it certainly is a challenge to fully engage all constituents.

Panelist 3: In STEM, there seems to be disproportionate focus on women and other minorities rather than underlying structures that discourage diversity, equality, and a level playing field. We need more discussion on work and life issues and finding ways to make universities more attractive places for faculty to work. Institutions need to adopt flexible work and life policies such as part-time tenure track positions, paid leave for care giving, and diversified pathways for advancement.

Panelist 4: I'll answer this from the perspective of diversifying the faculty. One of the biggest challenges I see in diversifying STEM in the academy is making the job (of tenure eligible faculty) more attractive and viable to a broader range of people. Expectations for work-life balance are changing and many talented scientists and engineers are electing to pursue careers elsewhere. The timing of the tenure clock is especially difficult for young families and, as research has shown, is even more challenging for women faculty. The exclusion of potential faculty who place high value work-life balance is not only a loss to the functioning of the academy, but also is damaging to the students who do not see role models among the faculty that they would like to (or even feel they can) emulate.

Panelist 5: I think the biggest challenge that we have in creating gender equity in STEM is that, at every level, women are capable, but do not engage at the same rate as men. It starts in junior high school and continues through leadership positions in the academy. I think we have significant work to do to understand why, to change perceptions of STEM, and to structure STEM

careers in a way that can facilitate the success of everyone, men and women alike.

Panelist 6: It is clear to me that we need to increase the participation of women and underrepresented minorities to STEM fields. One of the greatest challenges is making young girls aware of the fact that STEM fields do not strangle their creativity, in the contrary; these fields provide them tools they can use to make a difference and change the world.

Panelist 7: I think one of the greatest challenges for diversifying STEM in the academy is changing the current self-reinforcing “culture.” Change is hard and culture is complicated and multifaceted. There is a lot of work yet to be done to understand all of the different aspects of culture and our multi-level system that hinder diversification of STEM. From a big picture standpoint, I think one aspect to consider is public perception of STEM fields and gender roles associated with that perception. At all levels (individuals, departments, organizations, society) there also needs to be the appropriate support and resources in place to promote diversification.

Panelist Question 3: In your opinion, what are the most effective programs for advancing women and underrepresented minorities and why?

Panelist 1: The most effective programs are those that openly discuss solutions to challenges women and underrepresented minorities face. Programs that provide resources and strategies to navigate and prevail in the academic career game produce more successful women and minorities who enjoy their job and set a positive example for others to follow.

Panelist 2: In my experience, the most effective programs for advancing women and underrepresented minorities are those that are intentional, are multifaceted, and achieve broad participation. Diversity efforts need to be as much the priority and responsibility of majority groups as it is for minority groups. Therefore, it is crucial to demonstrate that each and every member of an organization derives tangible benefits from diversity. It is also important to devise sustainable activities; diversity requires continual and sustained effort and attention.

Panelist 3: Effective programs seem to take a comprehensive approach and work at both individual as well as institutional levels. Institutional initiatives should involve and benefit the entire campus community, women as well as men and minorities as well as majorities. Changing institutional structures, assumptions, and behaviors is certainly difficult but necessary for improving the culture of STEM in the academy.

Panelist 4: Again, from a faculty perspective. We have found that transformation requires numerous strategies and programs that address a number of critical issues. I’ll choose just one for now. In line with my

previous comments, developing policies related to balancing personal and professional life is an important first step. Such policies as tenure clock delay, part time tenure, partner accommodations, and robust arrival of child policies can make the difference for junior faculty. However, policies alone are not sufficient if the culture (and practices) of the institution is unaccommodating.

Panelist 5: I don't think there is any one program or set of programs that has fully addressed the issues of diversity in STEM. The reasons why women and minorities are underrepresented in STEM are rooted in an interwoven set of issues that work on personal, organizational, and societal levels. I would suggest that the most effective programs would be ones that both recognize these three levels of interaction, and are so widespread that there is sufficient momentum to positively affect the culture of our society in addition to individual organizations.

Panelist 6: I agree with the other panelists that it is time to openly discuss the challenges faced by women and underrepresented minorities and identify solutions. My way of helping in advancement of women and underrepresented minorities is through mentoring at all levels: mentoring high school girls about the impact that they can make to the world through science and engineering; motivating, engaging in research, discussing opportunities for career advancement with undergraduate and graduate students; mentoring and being a role model to junior faculty.

Panelist 7: Like other panelists expressed, there probably isn't a single most effective program. There are multiple approaches that work and particular ones may be more appropriate for particular contexts. One thing that most, if not all, of these approaches have in common is that they get the issues out in the open. People do not generally solve problems that they don't recognize exist. Fostering discussion on the issue is a good start in any situation. In addition, I think a good solution requires an understanding of the dynamics of the multi-level system in which it resides. Then, I think any good solution requires action, reflection, and iteration.

Panelist Question 4: Why have you participated/supported the development and expansion of the Advocacy Tips Initiative and how have you promoted this resource at your own institution?

Panelist 1: I think that the vast majority of individuals in our professions want to help and promote others including students and colleagues. However, many, of this vast majority, do not know HOW to properly help which manifest either as odd/ineffective actions or no action at all. Thus, the greatest resource we can provide is to provide the vast majority of individuals the resources, attitudes, information, and confidence to help and promote women and underrepresented minorities at all levels. The short

tips are intended to be accessible to extremely busy faculty and administrators.

Panelist 2: Over the past years, I have learned a tremendous amount about gender equality in particular and diversity in general. I am convinced that diversity is in the best interest of our professions and institutions, and that we all have a shared responsibility to work toward promoting and achieving diversity. I have seen firsthand successful results the advocacy tips at [Institution], and I am hopeful these successes will be multiplied with broader dissemination.

Panelist 3: While creating awareness around issues, including underrepresentation of women and other minorities in STEM and unconscious bias, is necessary, it is not sufficient. People want and need to know what they can do to address these issues. The Advocacy Tips Initiative does just that – create awareness and describe how individuals can advocate for their colleagues. At our institution, we advertised the Advocacy Tips Initiative on our campus-wide newsletter. I make sure to forward the tips to faculty, both women and men.

Panelist 4: As in my previous comments, change in policy (or top-down) change is not sufficient to promoting a new culture. As is well understood and reported in the literature, departmental and university culture is dictated by the attitudes and behavior of the majority, especially those in leadership. Engaging advocates and allies in the majority population can affect that necessary culture change to produce the prevailing climate. Providing concrete examples and tips to those in position to promote that change is a great way to start.

Panelist 5: I am supportive of the Advocacy Tips Initiative because I believe that it is a small but effective piece of the overall solution. I think these tips give concrete ways of thinking about diversity in small doses, so that when taken as a whole they can be effective in shifting people's thoughts and behaviors with respect to inclusion and diversity. This is a small but important step in shifting towards a more inclusive culture.

Panelist 6: The Advocacy Tips stress some good points, which I relate to very well. Early in my career I felt intimidated being the only women around the table in faculty meetings, or having to explain to my department head why, as an untenured faculty, I needed some release from teaching the semester I had my baby. In my career I have taught and advised a number of female students. In several occasions I have discussed with them their plans for the future. Many had a plan and knew exactly what they wanted in their career. However, I also had some bright girls who were confused and unsecured. Reading materials, such as the Advocacy Tips, would help these girls to get

answers to some questions they may be lingering on. I do advise my students to read the Advocacy Tips and get involved with WIED and WORMS.

Panelist 7: I am supportive of the Advocacy Tips Initiative because I think it provides a resource for people at multiple stages of the change process. It offers a start of a much-needed discussion for some people who haven't explicitly considered the challenges of diversifying STEM. For other people that have considered the challenges but are restricted by resources (including time) and aren't sure what to do, I think the tips continue the discussion and provide feasible ideas for moving forward in small steps. While not a complete answer to the problem, the Advocacy Tips Initiative delivers a valuable resource to facilitate change.

These panelists' perspectives are provided as a supplement to the panel session. However, panel attendees will benefit from the interactive discussions with the audience that will include with practical advice on implementing the Advocacy Tips in their work climate. Future efforts will be discussed and enthusiasm/advice sought from attendees.

### **Conclusions:**

The Advocacy Tips Initiative was developed from the foundations of the [Institution]'s ADVANCE program, which included an [Name] Training program. The motivation for both efforts is to facilitate majority involvement in developing a supportive climate for women and underrepresented minorities in STEM fields. Long term impacts of developing a nation-wide empowered majority could include widespread changes in academic climates thus dispelling micro-messages discouraging women and minorities to flourish in STEM.

The Advocacy Tips thus far have been developed by the [Institution] ADVANCE team's co-PI, but the process is being opened to include tips from additional sources. All researchers in the field are welcome to contact the authors to contribute. The goals are to provide tangible, easily accessible attitudes and activities that allies can use to advocate for women and underrepresented minorities.

In addition, all readers are encouraged to freely forward the link to the Advocacy Tips website (<http://wied.asee.org/AdvTips.html>) to colleagues, organizations, and institution wide newsletters/other. The resources are relevant for faculty, staff, and administrators at all levels. Organizing informational sessions or discussion groups on your campus can also be beneficial for minority and majority individuals and can serve as a catalyst to warm university culture for women and underrepresented minorities.

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