Strategic Planning for Diversifying Your Student Body in Postsecondary Computing Programs

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1. INTRODUCTION

This workshop is designed for Computer Science administrators and faculty who wish to diversify the student body in their undergraduate and graduate programs. The National Center for Women and Information Technology (NCWIT) Extension Services Program (ES) works with postsecondary departments of computing to facilitate their implementation of strategic, systemic diversity-based change efforts based on their own institutional contexts. In this workshop, NCWIT ES staff will present the Undergraduate and Graduate Systemic Change Models, which comprehensively illustrate the systemic components of a computing department where change efforts can be focused. Furthermore, NCWIT ES staff will utilize evidence-based resources to lead attendees through hands-on activities to determine which areas of the systemic change models should be areas of focus, as well as how to go about strategic, systemic planning of change efforts. By implementing diversity-based change efforts in a strategic, systemic manner, administrators and faculty will be able to increase the numbers and percentages of underrepresented students in their programs on a sustainable basis.

2. BACKGROUND OF NCWIT AND EXTENSION SERVICES

NCWIT is a coalition of nearly 1,300 academic institutions, government agencies, non-profit organizations, and industry corporations and startups working to increase women's meaningful participation in computing, particularly in terms of innovation and development – at all intersections of race, ethnicity, class, age, sexual orientation, and disability status. The NCWIT Theory of Change (Figure 1) illustrates NCWIT's strategic approach to accomplishing its mission. By making explicit the NCWIT three-pronged strategy (convene, equip, and unite) and the assumptions underlying the approach (research and knowledge gained through ongoing evaluation), the Theory of Change explains how short- and medium-term outcomes can lead to sustained impact. It highlights the importance of establishing necessary conditions (awareness, knowledge, and motivation) as well as actions (individual actions and organizational change) for reforming systems to sustain impact [5]. Using research-based practices to equip individuals to bring about organizational reform, ES is aligned with the NCWIT Theory of Change. ES furnishes academic change leaders with strategies, knowledge, and resources to implement and sustain recruitment pipelines, welcoming environments, and meaningful curriculum at the undergraduate and graduate levels.

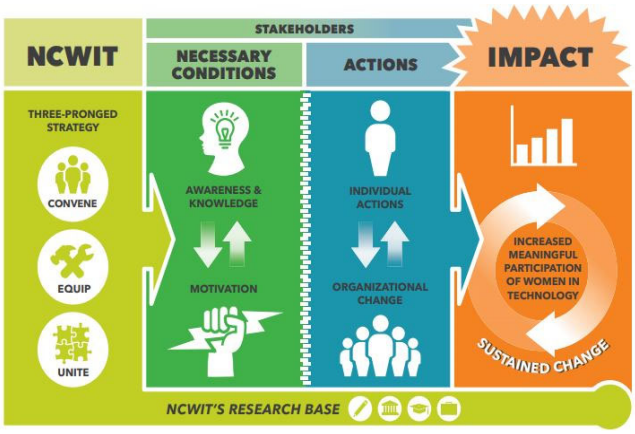

Figure 1. NCWIT Theory of Change.

Interventions for increasing diversity in STEM contribute to the greater participation of women seen in many STEM disciplines today. National data indicate biology, chemistry, and biomedical engineering continue to see high participation by women, partly because women become familiar with biology and chemistry content and jobs in high school and gain confidence that they can be successful **[3]**. Other disciplines, like computing, have improved because of concentrated outreach and intervention efforts, but more work is needed to reach parity.

Launched in 2007, ES is both a service—providing customized consultation to participants—and a carefully curated collection of research-based resources that are available for free to anyone who requests them. Both the service and resource collection are informed by literature and theory. ES provides theoretical frameworks by which departments can achieve greater enrollment and graduations rates for women and other underrepresented groups.

3. NCWIT POSTSECONDARY SYSTEMIC CHANGE MODELS

NCWIT's approach to institutional transformation is philosophically underpinned by systemic change. Systemic change is comprehensive, taking into account all aspects of a socio-educational system [1]. Systemic change does not assume that women in the system are deficient and it is not piecemeal. Social settings, learning environments, and structures within and around postsecondary programs are often detrimental to recruiting and retaining women.

The NCWIT Undergraduate Systemic Change Model draws attention to the systemic components that affect whether or not students enroll in and persist in an undergraduate degree program. The model, shown in **Error! Reference source not found.**2, incorporates theory and empirical studies on recruiting and retaining women in computing, described in depth in multiple articles and on NCWIT's website [1, 2, 4, 6, 7, 9–11]. The six

elements of the model are: recruitment, curriculum, pedagogy, student support, institutional support and policies, and evaluation and tracking. When implementing change efforts, departmental change leader teams should consider all components of this model, which are interconnected. In addition to focusing on empirically-based issues that bring women in or push them out, ES staff provide institutions with usable, research-based resources related to each of the six elements of the model for helping change leaders take practical and realistic actions [8].

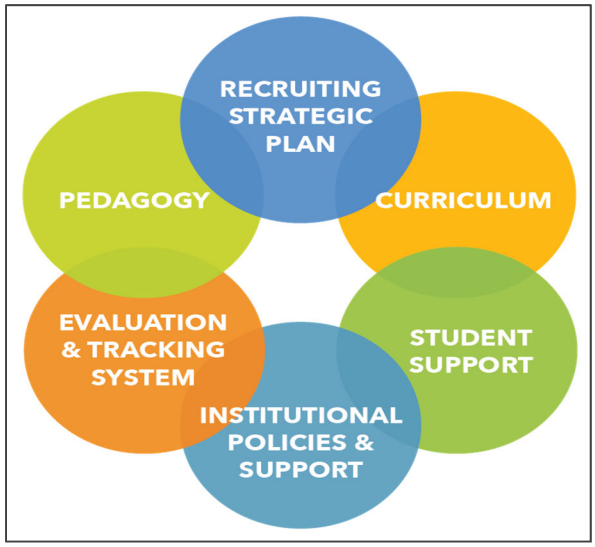

Figure 2. NCWIT Undergraduate Systemic Change Model.

The newly developed NCWIT Graduate Systemic Change Model is based on a thorough review of relevant theory, empirical research, and experience reports on interventions. ES staff organized the literature into six critical elements for recruiting and retaining women in doctoral programs. These six elements, shown in Figure 3, include admissions, advisors, the doctoral lifecycle, social ecosystems, policies and accountability, and evaluation. The six elements are mutually influential, and therefore not mutually exclusive. Yet the model is effective for driving faculty attention to assess practices related to each element, helping them to choose whether and how to intervene in elements of their program.

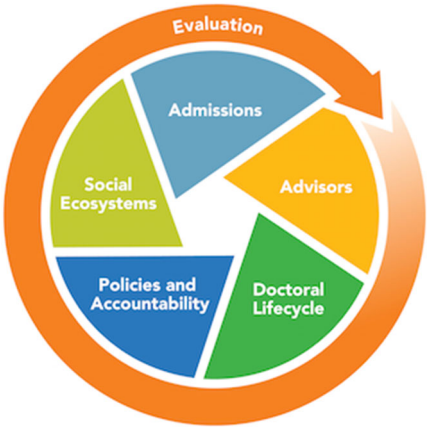

Figure 3. NCWIT Graduate Systemic Change Model.

4. WORKSHOP TIMELINE

Importance of Strategic Planning and the NCWIT Theory of Change: 5 minutes

NCWIT Undergraduate Systemic Change Model: 5 minutes

NCWIT Graduate Systemic Change Model: 5 minutes

Interactive Activity – Assessing Your Programs: 15 minutes

Group Share-Out: 5 minutes

Interactive Activity – Beginning Your Strategic Planning Efforts: 15 minutes

Group Share-out: 5 minutes

Accessing NCWIT Strategic Planning Resources and Conclusion: 5 minutes

5. REFERENCES

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