Minority STEM Doctoral Student Success (Experience)

Dr. Keith A. Schimmel P.E., North Carolina A&T State University

Keith Schimmel is a Professor of Applied Engineering Technology, Director of the Applied Science and Technology PhD Program, and Education Director for the NSF CREST Bioenergy Center at North Carolina Agricultural and Technical State University.

Dr. C. Dean Campbell, North Carolina Agricultural and Technical State University

Dr. C. Dean Campbell has served as Assistant Dean for Academic Services in the Graduate College at North Carolina Agricultural and Technical State University since 2012. He has worked at other leading research universities in a variety of administrator roles in graduate education, and presently serves as a co-investigator on the AGEP NC Alliance leadership team. His research interests and publication record include a focus on organizational effectiveness and diversity in higher education, administrator professional development, and faculty and graduate student socialization.

Dr. Marcia Gumpertz, North Carolina State University

Marcia Gumpertz is professor of statistics at North Carolina State University. She serves as PI of N.C. State's AGEP North Carolina Alliance project: An Institutional Transformation Model to Increase Minority STEM Doctoral Student and Faculty Success. This is an alliance of NC State, NC A&T State University, and UNC Charlotte.

Dr. Yvette Maria Huet, UNC Charlotte

Yvette Huet is Director of the ADVANCE Faculty Affairs and Diversity Office, a Professor of Kinesiology at UNC Charlotte and PI on the NSF AGEP-NC Alliance grant . She graduated with bachelor's degrees in Microbiology and Human Biology from the University of Kansas and a Ph.D. with Honors in Physiology from the University of Kansas, Medical Center. Following a postdoctoral fellowship at Monsanto Company in Chesterfield, MO she began her academic career at UNC Charlotte. where she was tenured and went on to be a Full Professor in the Biology Department at UNC Charlotte. She was the Faculty Development Coordinator in the College of Liberal Arts and Sciences and the Interim Chair of Kinesiology. She continues as a Professor of Kinesiology and has been Director of the ADVANCE Faculty Affairs and Diversity Office for over 10 years. Her research is in the areas of Endocrinology, Reproductive Biology and Sexually Dimorphic Disease as well as on Mid-Career Mentoring.

Dr. Ajit D. Kelkar, North Carolina Agricultural and Technical State University

Dr. Ajit D. Kelkar is a professor and chair of the Nanoengineering department at the Joint School of Nanoscience and Nanoengineering. For the past twenty-five years, he has been working in the area of performance evaluation and modeling of polymeric composites and ceramic matrix composites. He has worked with several federal laboratories in the area of fatigue, impact, and finite element modeling of woven composites. He has published over two hundred papers in these areas. In addition, he has edited two books in the area of Nano Engineered materials. He is a member of several professional societies including ASME, SAMPE, AIAA, ASM, and ASEE.

Dr. John P. Kizito, North Carolina A&T State University

John Kizito is a Professor of Mechanical Engineering, Director Graduate Program in Mechanical Engineering Program at North Carolina Agricultural and Technical State University. His research areas include Microgravity Fluids, Thermal Management and Astronautics. He is a member of SAE, ASME, and AIAA.

Departmental Initiatives across a University Alliance to Increase Minority STEM Doctoral Student Success (Experience)

Abstract

Three diverse public universities (North Carolina State University, University of North Carolina Charlotte, and North Carolina Agricultural and Technical State University) have adapted and implemented an institutional change model that proposes five core elements for achieving cultural change in colleges and universities to increase the percentage of underrepresented minority (URM) faculty in STEM fields. Since URM doctoral students spend most of their time exposed to the culture of their academic department as they take classes, conduct research, and interact with departmental faculty, staff, and other graduate students, the climate they experience and the support they receive at the departmental level can have a major impact on their success. When interventions address students directly, once they graduate, there may be no lasting change in the department. However, when faculty attitudes and mentoring practices along with departmental processes and procedures change, the changes are likely to be more sustainable.

Using institutional theory as the analytical lens, the purpose of this paper is to examine how one collaborative project implements a faculty-led institutional change model for diversifying the STEM professoriate. Each participating doctoral granting department has a volunteer faculty member interested in URM success designated as a *Faculty Fellow*. The *Fellow* receives programmatic support to increase their understanding of the issues facing URMs in doctoral programs and assessment support to identify the departmental practices that may be hindering URM student success. Together with their department head and director of graduate programs, they work with the departmental faculty to understand graduate student pathways, identify practices and policies that promote success, and diagnose trouble spots. Based on this study of the graduate student experience in their own department, the *Fellow* develops a departmental initiative designed to address departmental weaknesses. The faculty as a whole develop a departmental diversity plan to build these insights into departmental practices and procedures. This paper will explore the process of developing the departmental initiatives and diversity plans as well as report on some initiatives and plans developed. The benefits and drawbacks of the approach are discussed along with best practices identified to this point.

Introduction

Of doctorate degrees granted in STEM disciplines in the U.S. for the past ten years, African-American and Hispanic/Latinx students make up only 2.7% and 3.3%, respectively [1]. After a STEM student has been in a program for two years or more, the URM doctoral student attrition rate is nearly 50%, with completion rates varying by discipline and ethnicity [2]. In engineering, for example, the completion rate is 47% for black students vs. 60% for white students. In math and physical sciences, the figures are 37% for black students vs. 52% for white students. Before there can be a more diverse faculty in STEM, these gaps must be addressed.

The National Science Foundation's AGEP program focuses specifically on African American, Hispanic American, American Indian, Alaska Native, Native Hawaiian and Native Pacific Islander doctoral students, postdoctoral scholars and faculty [3]. The AGEP program seeks to increase the representation of URM faculty in STEM disciplines by developing, implementing, and testing institutional collaboration models. The idea is to determine what practices in different

institutional settings are effective, scalable, and reproducible to other settings to achieve change nationwide. The program has been in existence since 1999, and previously the alliances have focused on directly supporting URM doctoral students with professional development resources (i.e., research skills, communication skills, etc.). In that time, the number of URM students completing the Ph.D. has increased slightly, yet there has been no significant increase in the number of STEM URM faculty.

The current set of funded grants plan to use grant resources to understand and change the conditions at the institutional level to leverage more diversity in faculty hiring, including training faculty on how to mentor STEM Ph.D. students to pursue the professorate rather than other careers paths. Current models in the AGEP network include supporting junior faculty in the tenure process at HBCUs and transitioning doctoral students to the professoriate with professional development [4]. The thrust of the NC Alliance AGEP project (AGEP-NC) presented herein is to first make *Fellows* knowledgeable about the issues that keep URM doctoral candidates from completing their degree programs and from seeking academic positions even when they graduate and, then, equip them to address those issues within their departments [5].

Faculty in Transformative Professional Learning Communities

An emerging area of research in higher education is the notion of faculty learning communities (FLC), which draws largely on communities of practice (CoP) research [6,7]. A CoP is a group of people who share an interest in something and are committed to learning more about how to do it through regular interaction. A FLC is a formally structured group of faculty members committed to instructional and curricular improvement with sanctioning or endorsement from institutional leaders. Similarly, a professional learning community (PLC) is a type of CoP, but while CoPs are informal, the PLCs are formally structured and localized to a single institution. The PLC is sanctioned by administrative leadership, but operates largely through peer-to-peer learning among faculty who work around a specific agenda to advance an innovative idea, such as faculty diversity.

By examining a set of national STEM reform networks in higher education, researchers found that faculty participation in and out of PLCs created new spaces for innovation through transformative learning paradigms [8]. These scholars established communities of transformation (CoT) as new forms for PLCs that create paradigm-shifting practices and imagination of a new future. This finding contrasts with a recurring theme in previous research that asserts CoPs are informal and focus only on improving practice rather than changing practice. PLCs are transformative and function through joint activities, mostly at a distance mediated through digital communication; consists of leaders who promulgate a new philosophy for a new reality; and span multiple institutions, agencies, and organizations. This paper extends on the ideas proposed in the study of other STEM reform projects in higher education, which have suggested the need for more empirically-based findings on how faculty learning communities function.

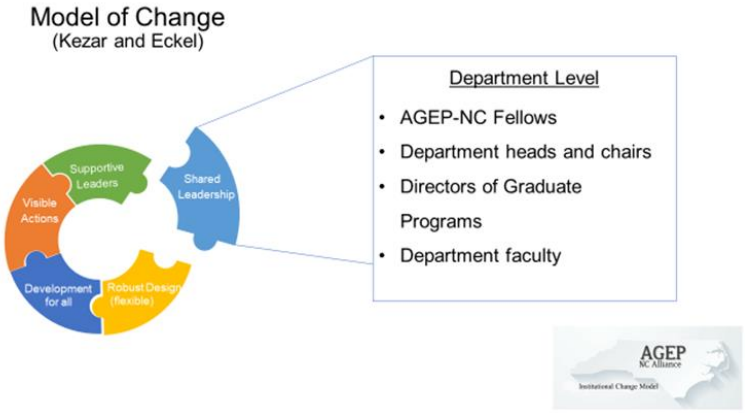
Since the tenure and reward system of higher education provides faculty with high levels of autonomy, the nature of change through CoPs in higher education reform is complex. However, researchers have found collaboration between faculty and professional staff supported pedagogy reform through the use of FLCs [9]. Lester and Kezar (2017) examined how CoPs foster

distributed leadership in STEM pedagogy change in higher education across a network of faculty participating in a national network [10]. Leadership within the CoP may foster the expansion of the work and interests of CoPs to others located outside of its institutional confines by creating regional or national networks of STEM CoPs (e.g., Project Kaleidoscope, BioQUEST Curriculum Consortium, etc.). Additional research on STEM CoP networks in higher education examines pedagogy reform, including how the networks advocate for transformation of pedagogy practices within and across institutions rather than overall CoP impact [8].

The AGEP-NC project centers on faculty serving as institutional change agents from the bottom-up, the top-down, from within, and from outside the research university. The department-led change approach features *Fellows* who participate in PLCs in multiple STEM departments across the three universities. Gehrke and Kezar (2017) suggest that STEM faculty tend to focus more on departmental initiatives than faculty from the social sciences. STEM faculty are strongly influenced by national organizations that have a history of pursuing reform focused on their disciplines, hence departmental rather than broader institutional changes [21]. The AGEP-NC faculty change agents work as a cross-institutional, collaborative project leadership team to advance change strategies within a CoT.

The approach in this work is based on the academic institutional change model of Kezar and Eckel [11,12], which proposes five key conditions for achieving cultural change in colleges and universities:

1) ***Supportive senior administrators*** (such as provosts and deans),
2) ***Collaborative, shared leadership*** throughout the project shared by administrators (e.g., department heads) and other faculty members involved in the change initiative,
3) ***Robust project design*** that presents a clear picture of the future, includes set goals and objectives related to the implementation of that picture, yet is flexible enough to allow adjustments to new opportunities,
4) ***Development opportunities*** for individuals to learn new knowledge and skills related to issues associated with the change effort, and
5) ***Visible actions*** taken during the project demonstrating that change is still important and is continuing.



This paper focuses on how these five elements affect the development of departmental plans and initiatives for diversity in doctoral programs.

Theoretical and Methodological Framework

Institutional Theory: Culture, Context and the Collegium

Kezar (2018) captures the multi-frame perspectives documented in the study and practice of higher education change. Cultural views of understanding and practicing change in higher education emphasize knowledge formation in context and de-emphasize traditional scientific management approaches that prioritize logic, roles, and goals. Accordingly, the change process from a cultural view incorporates institutional culture, institutional context, and other external forces, including disciplinary societies. Cultural theories of change draw on the analysis of meaning and values those in an organization espouse related to change. Assessments of institutional history, symbols, and mission are important for change agents to consider in the reform process [13,14].

Elements of the institutional context include professional bureaucracy and collegium that collectively exert significant force on the change process through faculty participation in governance. The organizational structure includes professionals with high degrees of autonomy who engage in self-policing and peer review. Wherein a change process depends on change agents exercising power, or exertion of influence and control over others, research on faculty participation in governance points to expert power and referent power. Expert power derives from allowing others with special knowledge to exert influence. Referent power relates to influence based on collegial trustworthiness. Collegiality is a key value in faculty culture characterized by a focus on "consensus, consultation, and deliberation...a mutual respect and equality among [faculty]" [13, p. 119]. Collegial culture stems from disciplinary orientation for faculty, notably from departmental work with other faculty, and extra-mural engagement with other faculty in professional societies, associations, and peer-review work through funding agencies.

Three phases of change characterize a change project's life cycle: mobilization, implementation, and institutionalization [13]. Mobilization refers to raising awareness of the need for change, gaining initial support from others by disseminating information, and making innovative change in organizational structures. The implementation phase consists of new policies and procedures introduced as innovations at the mobilization phase transition to common standard operating procedures at the behavioral level of organizational life. Individuals prefer the behavior and even accommodate troubleshooting to solve logistical issues associated with change, yet they have not fully accepted it. Finally, the institutionalization stage is characterized by change as the standard operating procedure, normative behavior, expected, routine, permanent, and resilient [13, p. 202]. Kezar (2018) notes that theories of change recognize institutionalization as "changing of the culture and core understandings of the culture" [13, p. 204].

Methodology

Project Leadership. AGEP-NC consists of a leadership team including tenured STEM faculty members who are the principal investigators, several co-investigators including senior diversity and academic affairs administrators, a social science researcher, professional evaluators, and other departmental STEM faculty from all three institutions. Project management consists of bi-weekly videoconference meetings with leadership team members, annual site visits with NSF officials, and meetings with external advisory board members. Recommendations from the NSF, advisory board, and evaluators on project developments are incorporated into AGEP-NC project action plans. Collectively, the leadership team and its partners, including higher education

researchers on the advisory board, work as change agents as they participate in strategic activities.

Short-term goals proposed by the principal investigators are associated with the above-mentioned mobilization phase of change:

- Diversity in the doctoral program becomes a recognized department priority in at least 25 STEM departments in the North Carolina Alliance,
- Faculty in these departments become knowledgeable about the experiences of URM students and best practices for culturally responsive dissertation mentoring, and
- These departments develop formal plans for promoting the success of URM dissertation students.

As discussed in more detail below, individuals on the leadership team collectively serve as the change agents as well as participant-researchers who undertake reflexive inquiry, simultaneously researching and implementing change within an action research cycle of plan, act, observe, and reflect.

Fellows Program. The *Fellows* selected to the PLCs are usually tenured faculty members in participating STEM doctoral-granting departments who share a strong interest in URM student success. *Fellows* meet about seven times per year on their host campuses to discuss short readings on topics relevant to URM graduate student success, such as mentoring, publishing, and cultural issues. Key strategies presented for mentoring across race include recognizing stereotypes and appreciating individual differences, manifesting diversity-promoting attitudes and behaviors, increasing cross-cultural competence, and promoting secondary mentorships [15,16]. Results of baseline surveys of faculty and students are provided to *Fellows* to be shared in the department discussions [17]. The *Fellows* periodically meet with their department chairs and graduate program coordinators and lead discussions with faculty in their home departments to share information generated at those sessions. In addition, the *Fellows*, chairs, program coordinators, deans, and provosts from each participating institution attend program-wide meetings twice a year at which they learn from the experiences of their counterparts at the other two universities. The *Fellows* also function as change agents, helping faculty in their departments to better understand the experiences of URM students and facilitating the development of a written plan for making changes in department policies and practices to improve URM doctoral student success. They also implement small initiatives funded by the NSF grant (~$3,000 per department).

A *cohort* comprises the *Fellows* along with all other faculty and doctoral students in the Fellows' departments at a single university. Each cohort remains actively engaged in the program for two years. Participating departments have committed to releasing the *Fellows* from other service activities so that they may focus on the project during their two-year terms. Over the life of the project, six cohorts - two at each of the three participating universities - will be assembled and studied, leading to a total of at least 25 departments participating in the change initiative. This paper reports on the first cohort (5 *Fellows*, 5 departments) at one university that is 1.5 years old and two cohorts from the other two universities that are 0.5 years old (6 *Fellows*, 6 departments; 5 *Fellows*, 5 departments). The topics for the *Fellows* meetings have included mentoring skills,

department culture around authoring, perspectives on science and knowing, resources and discussions on experiences of URM doctoral students, institutional transformation process, culture change and competing priorities, and roles of department leadership and *Fellows* in the AGEP-NC model of change. At summer and winter alliance meetings, *Fellows* have participated in workshops on communication styles and barriers to communication between faculty advisors and students and mentoring to prepare students for academic careers. More detail about the project, the change model on which it is based, and specific readings discussed by the *Fellows* can be found at https://agep-nc.org/.

All *Fellows* in Cohort 1, their department faculty, and graduate students were surveyed on issues of departmental climate and mentoring practices and the results were shared with the *Fellows* and summarized for the Alliance. Among the findings were that faculty and non-URM graduate students generally rate the environment as more welcoming for minority students than do the minority students themselves. Non-URM students also report a higher comfort level with voicing their opinions to their advisors than do URM students. Most significantly, a lower percentage of URM students (39%) intend to pursue an academic career following graduation than non-URM students (49%).

Method. This project uses interpretive case study analysis, which allows holistic analysis of discrete pieces of information "woven into ideographic framework" [18, p. 148] as an investigative report on a unique phenomenon, i.e., diversifying STEM doctoral education. In this regard, interpretive case study is more than a descriptive accounting of the phenomenon but is also an informed interpretation of existing theory founded in cultural interpretations relevant to the investigation. To that end, the focus is on institutional theory with the application of faculty in PLCs. In this regard, case study researchers collect the maximum amount of information available to them with the intent of theorizing or hypothesizing about the phenomenon. Merriam (1998) maintained that case studies are interpretive in that they draw upon descriptive data the investigator uses to develop conceptual categories that in turn illustrate, support, or challenge existing theoretical assumptions held prior to the data collection [19]. The primary data-gathering strategies employed were participant observation of project activities over a two-year period. Participant observation optimizes the research team's access to data, often through direct participation and observation of AGEP project events, analysis of related institutional documents, and reflection and introspection [18,20]. Information for the analysis includes review of on-campus office and off-campus participation in a variety of meetings, including online project team meetings, technical assistance meetings with the sponsoring agency, professional association meetings to share project research findings, and analysis of project evaluator and social scientist internal documents.

Department Plans for Diversity in Doctoral Programs

Fellows, department heads, and graduate coordinators were provided a template to help lead departmental faculty discussions toward developing departmental diversity plans. Examples for some elements of a possible plan were provided. Drafts of the department plans were evaluated by the project team using a rubric containing seven areas that were requested in the template: (1) Table of demographics of doctoral student population and degrees awarded in the past three years, (2) The faculty's assessment of any obstacles for URM doctoral students in the program and any elements of the program that enhance the success of URM students, (3) Three concrete

actions to promote success of underrepresented minority doctoral students in completing the PhD and preparing for faculty careers (based on the assessment of part 2), (4) A discussion of how the actions developed in part (3) will be sustained past the end of the *Fellow's* 2-year commitment, (5) Does this plan institute change strategies that will improve the department climate to positively impact URM graduate students and faculty in the program?, (6) Does this plan institute change strategies that will improve department practices so they positively impact URM graduate students and faculty in the program?, and (7) Does this plan institute change strategies that will improve department policies so they positively impact URM graduate students and faculty in the program? The leadership team's comments and suggestions were provided to the *Fellows* and used to improve the plans. Each *Fellow* is charged with providing a follow-up report in April 2021 describing the implementation, challenges and successes, and the impact one year after plan adoption.

The plans addressed procedural and budget issues related to departmental policy changes, which are important for sustainability:

"The policy changes mentioned above will be incorporated as written guidelines for the graduate program within this department. The Department Head will and the Graduate Coordinator will be responsible for the enforcement of the policies. At the end of each academic year, Departmental Graduate Coordinator will review the performance of the graduate students and suggest revisions to update the graduate handbook accordingly. Furthermore, the Department Head will put together plans to expose the faculties within the department to trainings and seminars focused on culturally responsive mentoring."

"Most of the action items we propose will not require additional budgetary funds once they are in place. For example, the mentor-mentee work/communication styles module and the IDP we be included in each offering of the existing graduate program core course 502, and materials for that course are actively shared among the faculty who teach it. Faculty can glean information from diversity statement workshop and convey this to future students.

The two action items that do require budget funds on an annual basis are the peer mentoring network and funds for travel to conferences. We have the following plans in place for their long-term sustainment: The graduate student peer-mentoring network is meant to be a program that is operated each year within the graduate program. If necessary, we will seek funds from the Graduate School and the multiple departments participating in this graduate program for the continuation of the peer mentoring network."

Some plans included specific high-impact policy changes:

"The Department revised its Reappointment, Promotion, and Tenure rules to include language that explicitly assesses the culture of inclusion in the laboratory and classroom environments of all faculty. These revised rules will constitute the new standard as of 2020."

Most plans included some form of enhanced student professional development experiences across the curriculum [22]:

"Current State: Beyond a first semester Introduction to Graduate Studies class, there is no formal professional development available in the department, and most students and faculty are unaware of the career development services and options available on campus, nor do they engage in meaningful structured professional development until the student jumps into searching for a job.
SMART Goal: By August '20, the Department will create a structured professional development program, using the existing Introduction to Graduate Studies class and the existing weekly (undersubscribed) seminar program, to engage students of all years in professional development. Workshop activities will include resume/CV building & feedback by academic and industry mentors, LinkedIn networking, how to set up & actively engage in Informational Interviews, diversity and inclusion training, career counseling and mentoring from alumni in both academic and industrial settings, and creating/periodic review of IDPs."

Most plans included some form of enhanced faculty professional development experiences:

"NRMN (National Research Mentoring Network) training for faculty."

Another common strategy was to enhance communication and transparency through use of updated websites, handbooks, and surveys:

"Graduate Handbook. The department's policies and expectations are clearly defined and explained in a handbook for graduate students, which is given to them as a hard copy during student orientation, the week before classes start, and available to them electronically through the departmental shared drive. This is a valuable resource for both faculty and students to ensure success by providing transparency."

"Mandatory annual survey of doctoral students on climate, expectations and progress."

Department Initiatives for Diversity in Doctoral Programs
The AGEP-NC project includes small amounts of funding to aid the implementation of initiatives includes within the departmental plans. Presented below are summaries of department initiatives that *Fellow* funds have supported in the first cohort of five departments. The choices for these initiatives have been data driven from departmental culture surveys that identified opportunities for improvements [17].

Project to increase participation of underrepresented faculty groups in research seminars: *A key gap faculty and students have identified is an opportunity to interface with successful URM faculty. Activities include advertising two faculty positions broadly in URM-friendly journals/web locations, hosting four externally invited URM seminar guests, and arranging meals and special interactive opportunities for students to meet with each guest.*

Seminar and discussion series on advising URM students: *To increase awareness of challenges associated URM graduate students and to increase involvement in recruiting and advising such students, two seminars and discussions targeting faculty and graduate students were proposed. The speakers offer two unique and complimentary perspectives on URM student experiences. One is a researcher studying classroom dynamics with a focus on inclusivity and equity in*

science. Thus, she can speak to the current state of science education and lead discussions on systemic issues relevant to training URM students. The other was trained (and thrived) in the department and thus can speak to the specifics of the department in addition to experiences pre- and post-graduate school.

Soft-skill development for the students and facilitating culturally responsive mentoring practices for faculty: *A climate survey identified under-preparation in writing and public speaking impede the progress of doctoral students and faculty have a lack of confidence in mentoring graduate students. To address these findings, the following two activities were undertaken: (1) Four-hour workshop for graduate students on public speaking and networking, (2) Facilitator to discuss culturally responsive mentoring among faculties at one of the monthly faculty meetings.*

Building a departmental and graduate program change model that increases cultural competence and creates a graduate experience that enhances the success of diverse and inclusive graduates and future faculty: *A variety of initiatives have been identified to address department concerns: (1) Develop a mentor-mentee work/communication styles learning module into the graduate program core course required for all new graduate students, (2) Host a workshop on how to write and evaluate a job application diversity statement that will train faculty and graduate students, (3) Develop a peer mentoring program for graduate students, and (4) Provide conference travel funds for graduate student(s) and/or faculty member(s) to participant in a conference URM program/event, (4) To revisit the doctoral qualifying examination in particular for the doctoral programs that are highly interdisciplinary in nature.*

University Leadership Initiatives

The project leadership regularly meets with chairs, deans, and provosts to keep them informed on the project and to brainstorm possible initiatives. One measure of the effectiveness of the change model being developed and implemented in the project is the number and quality of initiatives related to URM PhD student success that are being advocated for by university leadership. Some examples of such initiatives are:

1) All three campuses have some faculty mentoring initiatives underway facilitated by AGEP-NC. One College of Engineering is developing a workshop on inclusive mentoring for its LSAMP Bridges to the Doctorate faculty mentors and has invited the AGEP-NC *Fellows* to participate. Another University has embarked on an initiative to improve the research climate on campus by training graduate faculty who seek to be better research mentors using the evidence-based practices of the CIMER Institute (Center for Improved Mentoring Experiences in Research) at the University of Wisconsin. At another university, the Graduate College, and Academic Teaching and Learning Center are collaborating on developing a sustainable program of online and in-person faculty mentor training based on CIMER resources.

2) At one university, the College of Sciences has invited the AGEP-NC leadership to work with their newly-formed task force on climate in research laboratories.

3) The Vice Provost for Faculty Affairs at one university will share with all department heads the new reappointment, tenure and promotion rules of one *Fellow's* department that include language explicitly assessing the culture of inclusion in the laboratory and classroom environments of all faculty.

4) One department's curriculum and qualifying examination format have been modified to improve the retention rate among URM students especially for those with non-engineering backgrounds.

5) One department is highlighting AGEP-NC and its commitment to mentoring URM students as part of a new digital marketing campaign.

6) Multiple graduate programs are in the process of or have reviewed their use of GRE scores in admissions.

Summary and Conclusion

The important role of the Kezar change model elements in the development of the departmental plans for diversity in doctoral programs will be summarized here along with how lessons learned from cohort 1 are being used to direct the development of plans for cohort 2 and future cohorts.

Collaborative leadership throughout the project shared by administrators and other faculty members involved in the change initiative is element 2 of the change model. Providing the *Fellow*, department head, and graduate coordinator with tools and skill development to communicate and work together to lead the department faculty in development of a departmental diversity plan can be a significant challenge. The culture in some STEM departments discourages spending faculty time on anything outside the scientific discipline and this presents a significant hurdle to *Fellows* attempting to start department-wide discussions about diversity in their graduate programs. For cohort 1, it was found that maintaining momentum toward a plan required the campus PI's to meet periodically with the department head and director of graduate programs. This will be continued in cohort 2, as well as adding meetings with the department faculty as a whole. Additionally, the plans developed from cohort 1 will be used to generate a more detailed plan template as part of an overall project Tool Kit under development to be made available to departments.

Robust project design that presents a clear picture of the future, includes set goals and objectives related to the implementation of that picture, yet is flexible enough to allow adjustments to new opportunities is element 3 of the change model. The diversity plan segments presented earlier reflect that individual departments did respond to data collected from their faculty and students to develop robust plans to address the unique aspects of their departments. During cohort 2, there will be more exploration of how multiple departments and units on campus can work together toward common goals, e.g. one university has mutual interest among Graduate College leadership, Academy for Teaching and Learning, and some departments to develop a faculty mentoring program.

Faculty development opportunities for individuals to learn new knowledge and skills related to issues associated with the change effort is element 4 of the change model. Through personal

testimony we see that the readings, discussions and workshop speakers have affected the thinking and understanding of the *Fellows*. Many of the initiatives developed during cohort 1 involve seminars and workshops for faculty development in learning culturally responsive mentoring skills. It is anticipated that this trend will continue in cohort 2.

Visible actions taken during the project demonstrating that change is still important and is continuing is element 5 of the change model. The diversity plans and the initiatives accompanying them are visible actions that can be seen by all stakeholders. It is anticipated that these actions taken by cohort 1 will help provide motivation to future cohorts and to other departments in these institutions.

Since URM doctoral students spend most of their time exposed to the culture of their academic department as they take classes, conduct research, and interact with department faculty, staff, and other graduate students, the climate they experience and the support they receive at the departmental level has a major impact on their success. Preliminary results from the department-level change model being developed and tested in this project are promising. Our biggest challenges have been: (1) What to do if a *Fellow* falls behind in their obligations; (2) Low survey response rates by students and faculty; (3) Communicating what the *Fellows* are learning to their faculty colleagues, and helping the *Fellows* to engage the rest of the department in the planning process; and (4) Moving some university administrators beyond verbal support of the project to actions that actively advance the AGEP-NC goals. One key ongoing effort to address these challenges is development of the project Tool Kit, which will provide a clear roadmap to departments for accomplishing department policy and procedure changes that affect department culture.

During the next year we anticipate two major areas of learning and development for the application of the AGEP-NC model of change. First, we will learn more about what needs to be done to support departments in implementing the departmental plans for promoting the success of their URM doctoral students in the year after the faculties' formal terms as *Fellows* ends. The post-*Fellow* year will be critical in determining whether departments adopt the changes proposed in the departmental plans and whether they become institutionalized as a standard part of departmental practice. The second major area of learning and development has already begun. It will involve tailoring the AGEP-NC model of change to the needs of different institutions.

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