

## Executing COE Faculty Development at the Intersection of a Strategic Plan and Faculty Well-being

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## **Executing COE Faculty Development at the Intersection of a Strategic Plan and Faculty Well-Being**

Many colleges of engineering have strategic plans that capture the key aspects of their mission to promote excellence in the college. Often, the college's strategic plan is based loosely on the university level plan in terms of the themes and overarching goals. Faculty have varying levels of input into and interaction with the execution of the strategic plan with the majority of their focus concentrating on the day-to-day operations of their research and academic programs. Faculty well-being surveys can reflect the status of the faculty views on their collective experiences in an institution; some issues raised in these surveys can be addressed in targeted college of engineering faculty development initiatives.

The purpose of this paper is to describe the process of how an established college of engineering faculty development office at North Carolina State University integrated the findings of a qualitative faculty well-being survey and programmatic faculty feedback into a modified roadmap for faculty development. Against the backdrop of the college's strategic plan, a group of senior engineering faculty provided discipline specific insights to ensure programmatic development that will impact the success of engineering faculty at all ranks across the college. The incorporation of an evaluation model provided new mechanisms and paradigm-shifting approaches to meet the core principles articulated in the college of engineering's strategic plan.

### **1. Introduction**

#### **1.1 A national perspective**

In addition to strategic plans and future visions, colleges around the world are exceptionally reliant on their faculty to promote excellence and pilot the university to new heights. Therefore, it's crucial for the college to provide for the well-being of its faculty in ways that not only improve the chances of achieving its goals but also, for the greater good of the college community. This can only be done with the help of the faculty identifying the problem areas in the realm of discipline-specific professional development and introducing innovative solutions to create new paradigms for career success. The task of systematically driving these improvements often falls into hands of a faculty development team. We will use the terms faculty job satisfaction and faculty well-being interchangeably.

Foor and Cano (2011) observed that, according to a number of job satisfaction surveys, faculty employed in the higher education sector expect their workplaces to have "cohesive work group, professional associations; esteem: social recognition, job title, high status job, and feedback from the job itself; self-actualization; challenging job, achievement in work, and advancement in the organization" (Foor & Cano, p.31). In comparison to other disciplines, the needs and expectations of engineering faculty are often somewhat unique and can be gleaned from the aforementioned resources. Specifically, it has been shown that faculty are more satisfied when their colleagues are collaborating, supporting and offering feedback on their ideas and research proposals (Ambrose, 2005). Attention must be paid to facilitating faculty performance in research, teaching, and service through strategic planning and enhancement of programs that promote long-term motivation, productivity, and job satisfaction (Clark, Corcoran, & Lewis, 1986). This paper discusses the process that an office of faculty development followed within a

college of engineering to empower their faculty. The specific objective was strengthening the workplace for its engineering faculty through targeted initiatives in addition to quantitative and qualitative analysis of surveys and feedback from the faculty it serves.

## **1.2 A college of engineering's response**

The College of Engineering (COE) leadership at the North Carolina State University (NC State) discussed in this paper recognized that, "One of the following situations usually occurs in colleges of engineering: (1) no one assumes responsibility for faculty development, with professors and administrators arguing that either it is not needed or the campus teaching center is responsible for it; (2) engineering faculty development is one of many charges given to an associate or assistant dean, but no one has it as a principal responsibility; or (3) an individual is designated as engineering FD coordinator and charged with improving teaching in the college but is given too little staff support and funding to accomplish anything meaningful (Brent & Felder, 2001, p.6)." Based on the understanding that faculty hires and retention are a critical investment in the future of the college, it follows that faculty satisfaction and their ability to be successful locally and globally are critical to protecting the college's human resource investment. In proactive response, the dean of the College, Louis Martin-Vega, and future associate dean of faculty development, Christine Grant, sought to inaugurate a faculty development office inside the college dedicated to the professional welfare of all engineering faculty. Collaborating with college leaders (other associate deans and department heads) for perspective on the nuances of nine different engineering departmental cultures, resources were committed to establish the office of engineering faculty development within the college in 2008. Grant, a full professor in the College, was appointed associate dean of faculty development, acting as the administrator dedicated to building a sustained program to address the increasing need for solutions to improve engineering-specific professional development and advancement.

In light of this, the purpose of the current research presented in this paper is twofold. Our first objective is to discover from the perspective of the engineering faculty which initiatives were most beneficial in meeting their professional needs and expectations, what support they may be missing, and what programs, events, and/or services, current or new, will address key challenges as they advance in their careers. Our second objective is to share experiential knowledge and lessons learned that will benefit the broader community of engineering faculty development leaders and advocates and their faculty in other colleges of engineering and to encourage an expanded, more comprehensive vision for engineering faculty development.

## **2. Engineering Faculty Development Program**

### **2.1 Curricula development**

While there is an emerging collection of literature on engineering faculty development, a majority of existing faculty development programs that we researched concentrate on faculty development related to teaching, instructional, classroom management improvement, and aspects of mentoring. The engineering academic landscape was calling for attention to wider-ranging programs that were not limited to improving teaching. We recognize that the roles, responsibilities, and expectations of engineering faculty are not limited to the realm of teaching,

and faculty are more comprehensively served by a broader range of professional development opportunities that address research, scholarship, career advancement, networking, and more.

Our initial approach to curricula development for engineering faculty was derived from input from college of engineering department heads and faculty, as well as a faculty development roundtable advisory group. The faculty development roundtable advisory group was structured to have representation from each department to incorporate the often nuanced faculty perspectives steeped in the cultures of the departments. Over the next six years, we utilized the advisory group to develop and maintain relevant content and to informally assess the effectiveness of our faculty development programming. Programs were modified as needed based on this informal feedback from both faculty and department heads. We also engaged both groups in the delivery of programs in the faculty development curriculum.

One of Grant's roles as associate dean of faculty development was to work with the engineering college leadership to develop a strategic plan for the College that aligned with the overarching strategic plan of the university. In 2013, the College's strategic plan was updated and integrated essential elements that directly addressed faculty well-being and faculty success. The faculty development planning team incorporated the most relevant aspects of the 2013 updated plan, shown in Table 1, into their programming as they continued to develop the curriculum.

**Table 1. COE 2013 strategic plan elements related to faculty development**

Foster and enhance cross-disciplinary and cross-campus research programs
Create, celebrate and maintain a diverse set of faculty
Improve and enhance mentorship of junior faculty
Continue to enhance faculty development and support activities in COE
Enhance faculty "innovation and training" in teaching
Increase faculty involvement in key interdisciplinary clusters and joint positions in industry and gov. partners
Invest in efforts that cross departmental and program boundaries
Enhance support for COE PhD student and faculty development programs

As we progressed, in addition to input from the roundtable, department heads and faculty, we studied results from a nationally recognized faculty well-being survey, Collaborative on Academic Careers in Higher Education (COACHE) in which our university participated between 2006 and 2011. The Harvard-based Collaborative on Academic Careers in Higher Education, COACHE, is a consortium of institutional leaders focused on the identification of cost-effective steps to improve faculty outcomes. University leaders across the nation utilize the COACHE Faculty Job Satisfaction survey as a benchmarking instrument to evaluate job satisfaction and faculty well-being.

NC State administers the survey to faculty campus-wide on a triennial basis. The leadership, including the College of Engineering dean, employ it to explore measures of and changes in

faculty satisfaction over time. Since the findings provide quantitative insights into faculty satisfaction by discipline, we used the COACHE survey results as a framework to relate components of our program to measures that the University and the College use to look at faculty well-being. Our intention is to become more connected to these measures in the ongoing implementation of our faculty development programming. This will enable our college leadership to address issues that may arise out of the COACHE survey with specific actions/programs that are also aligned with their documented respective strategic plans.

## 2.2 Assessment overview

By 2013, our program had matured to the stage where we needed to move forward towards a more scholarly method of strategic planning. Adopting a theory-based logic model (*Kirkpatrick Model*) to measure and improve program development, implementation, and sustainability of COE faculty development programs, we collaborated with an outside evaluator to develop a plan to internally evaluate the 7-year old program (Kirkpatrick, 2017). The purpose of the assessment was to evaluate faculty satisfaction with the program structure and curricula, to discover which of the initiatives were most beneficial in meeting college strategic plan objectives, and to ascertain additional faculty needs and expectations to incorporate into future programming.

## 2.3 Approach

Using the Kirkpatrick Four-Level Model we developed the survey tool for a formal assessment of the engineering faculty development initiatives from 2009-2014 (Kirkpatrick, 2016). We administered the survey in 2015 internally to 300 college of engineering faculty mentioned above with a 36% rate of response.

### 2.3.1 Definition

*The Four Levels of Evaluation*, also referred to as the *Kirkpatrick Evaluation Model*, was created by Donald Kirkpatrick, Ph.D. to define the four levels of training evaluation shown in Table 2. He created the model during the 1950s to enable a trainer to gauge the impact of a program's initiatives and interventions on participants in alignment with the achievement of the program's goals and mission. Today it is a widely respected model for evaluating the effectiveness of training programs.

**Table 2. Kirkpatrick's Four-Level Model focuses on four levels of training outcomes**

Level 1	<b><i>Reaction</i></b>	evaluates the degree to which participants find the training /workshop /professional development opportunity was or was not satisfactory, engaging and relevant to their jobs
Level 2	<b><i>Learning</i></b>	measures the participant acquired learning , increased knowledge, skills, perspectives, insights, based on the content of the program
Level 3	<b><i>Behavior</i></b>	considers the degree to which participants are applying what they learned during training
Level 4	<b><i>Results</i></b>	evaluates the change or outcomes in the participant's performance in terms of organizational results

Emphasizing Level 1 of the Kirkpatrick model, we developed our questions to examine the participants' reactions to events and opportunities within categories of faculty development

interventions. The answers to these questions provide necessary insights to serve as a guide for improving programmatic development that will impact the success and well-being of engineering faculty at all ranks across the college. Future surveys will target Levels 2 and 3 and allow us to determine the extent that participants' skills, knowledge, and attitudes are modified and to learn to what degree the faculty are applying their knowledge to their workplace (Kirkpatrick, 2016).

## 2.4 Survey questions

The survey utilized a combination of choice, ranking, and scaled questions to measure attendance frequency, and open-ended thought questions on the applicability of specific programs related to faculty career development. Questions focused on: demographics, rank, distribution of attendance at college sessions, and applicability and importance of sessions at specific career junctures. Examples of the type of questions that we formulated are found in Table 3.

**Table 3. Sample faculty development survey questions**

<b>Demographics</b>
<ul style="list-style-type: none"> <li>• Rank</li> <li>• Tenure-track / non-tenure track</li> <li>• Number of years at the university</li> </ul>
<b>Choices</b>
<ul style="list-style-type: none"> <li>• Workshops, information sessions, other opportunities that you attended or in which you participated (list provided – check all that apply)</li> <li>• Points/juncture in your faculty career at which you participate in the COE faculty development programs, how often, reasons (list provided – check all that apply)</li> </ul>
<b>Ranking</b>
<ul style="list-style-type: none"> <li>• Rank the benefit and impact relative to the reason you participated ...to share how helpful or impactful the activity was relative to the reason you participated.</li> </ul>
<b>Open-ended</b>
<ul style="list-style-type: none"> <li>• Share your general/overall impressions of the COE faculty development program in the following areas: MOST/LEAST helpful aspects;</li> <li>• Looking forward in your career, what development opportunities/resources will be helpful in career advancement</li> </ul>

We anticipated that the acquired knowledge would be in the following areas:

- Promotion and tenure (progression advancement)
- Scholarly Opportunities
- Funding and Research Development
- Teaching
- Networking
- Skill/Capacity building
- Publications and awards

For each of these areas we asked the faculty to: “Indicate the reasons why you chose to participate in program opportunities or events. (Check all that apply)”. Table 4 represents the areas that participants could select in the survey. These items were directly related to the college level faculty development initiatives implemented starting in 2008 and over the period of the six years surveyed.

**Table 4. COE faculty development survey areas of impact and effectiveness of programs**

<p><b>Promotion and tenure ( progression advancement)</b></p> <ul style="list-style-type: none"> <li>• Promotion and tenure information (progression/advancement)</li> <li>• Preparing / planning a path for reappointment</li> <li>• Preparing / planning a path for promotion</li> </ul>
<p><b>Scholarly Opportunities</b></p> <ul style="list-style-type: none"> <li>• Seeking cross-disciplinary collaborations</li> <li>• Preparing for sabbatical</li> </ul>
<p><b>Funding and Research Development</b></p> <ul style="list-style-type: none"> <li>• Looking for research collaborators (locally, nationally, internationally)</li> <li>• Learn about research and funding opportunities</li> </ul>
<p><b>Teaching</b></p> <ul style="list-style-type: none"> <li>• Develop/enhance teaching skills; learn new pedagogical approaches</li> <li>• Facilitate networking to identify potential collaborators and/or mentors</li> <li>• Increase awareness of the teaching professor role within the college</li> </ul>
<p><b>Networking</b></p> <ul style="list-style-type: none"> <li>• Seeking to connect with a community of scholars within the university (internal)</li> <li>• Seeking to connect with a community of scholars outside the university (external)</li> </ul>
<p><b>Skill/Capacity building</b></p> <ul style="list-style-type: none"> <li>• Develop leadership skills</li> <li>• Develop communication skills</li> <li>• Develop/enhance proposal writing skills</li> <li>• Enhance ability to promote publication and dissemination of my work</li> </ul>
<p><b>Publications and awards</b></p> <ul style="list-style-type: none"> <li>• Promoting publication and dissemination</li> <li>• Develop my professional branding</li> <li>• Seeking award nominations</li> </ul>
<p><b>General areas of interest</b></p> <ul style="list-style-type: none"> <li>• Learning the campus culture</li> <li>• Career/life integration</li> <li>• Identify a mentor/coach for my career</li> <li>• Connections with senior faculty and/or administrators</li> </ul>

**Service (Includes committee member, mentoring, sage, etc.)**

- Mentor faculty
- Share my experiences/perspective in tenure and promotion
- Share my experiences in proposal writing
- Share my experiences with NSF funding opportunities
- Share expertise on preparing successful packages for awards (i.e. teaching...)

Table 5 shares a brief sampling of some of the events, initiatives and workshops related to faculty opportunities represented in the survey.

**Table 5. Examples of specific program initiatives 2009-2014**

**Promotion and tenure (progression advancement)**

- Seminars for faculty at various stages of their careers in addition to opportunities to interface with faculty who had already navigated through promotion and tenure, and who had served on reappointment, promotion and tenure committees for the college.
- Roundtable sessions to provide information for department heads on policy updates and act as liaison between department heads and provost office.
- Critical communication sessions with non-tenure track faculty regarding implementation of new policies for non-tenure track promotion.

**Scholarly Opportunities**

- Specific seminars for faculty on internal and external opportunities to expand scholarly connections. This included sessions on making meaningful sabbaticals, research collaborations, and connecting interdisciplinary researchers via an interactive “round-robin” meet-up event.

**Funding and Research Development**

- COE faculty connections with funding agencies, industry, associated program directors and researchers. As part of the faculty development program, we have sponsored a combination of visits to agencies (e.g., EPA, NSF), national labs (e.g. Sandia National Laboratories) and industry. These programs are instrumental in connecting new and senior faculty to agencies resulting in new proposals, invitations to serve on panels, new collaborations and opportunities for their graduate students.
- Proposal writing workshops; workshops on how to start a large research center.
- Joint poster sessions with local agencies to stimulate research collaboration.
- Provide leadership and organizational support for national initiatives to enhance COE faculty advancement. Leadership for national level faculty development initiatives including NSF Days at home university, providing logistical and event support for faculty running national workshops.

**Teaching**

- Faculty support through coordinating graduate student teacher assistant training. Teaching professors learning community: lunches and roundtable discussions to develop solid connections for non-tenure track faculty to form mentoring and coaching relationships.



**Networking**

- College-wide collaboration festivals with faculty of all ranks, senior faculty sages to share knowledge with other faculty on targeted topics, also promoted networking connections; career development insights; collaboration, mentoring, opportunities for faculty to interact, ask questions, gain information relevant to professional, academic and research growth and development
- Women faculty lunch topical series: multi-rank, networking, informational
- Passport to engineering – women engineering faculty opportunity to interact with women students about engineering disciplines, graduate school opportunities, research, etc.

**Skill / Capacity building**

- Annual CAREER award proposal writing workshops and one-on-one ‘just in time’ mentoring

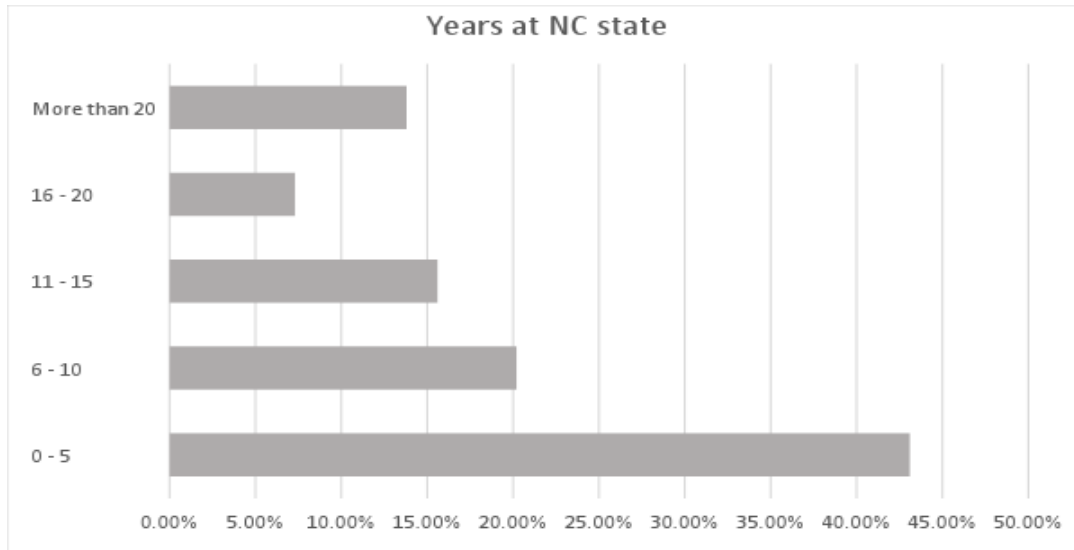
In addition to the core programmatic initiatives our faculty development program utilizes experienced faculty, called Faculty Sages to develop and deliver program content. The Faculty Sages essentially serve as coaches, advisors, and mentors to faculty and the program. The second unique element of the program is the Faculty Development Roundtable. The Faculty Development Roundtable (FDR) was originally convened to establish the initial framework of the faculty development curricula as it was being integrated into the college. The four goals of the FDR were to: (i) advise the COE associate dean of faculty development, (ii) identify and suggest innovations in faculty development, (iii) provide relevant department/discipline specific feedback on programs/initiatives, and (iv) provide guidance on faculty development roadmap.

**3. Methods and Results****3.1 Importance of college level internal program assessment: Well-being and programmatic**

We used a survey developed by members of the research team to evaluate participant perceptions of the faculty development programs. Participants responded to questions that focused on perceptions of the different faculty programs as it related to perceived benefit and helpfulness. Additional open-ended questions solicited information regarding what participants found helpful, barriers to participation, and areas of focus for future programs.

Participants who completed the survey engaged in at least one of the programs in the 2009-2010 through 2014-2015 academic years. Staff overseeing the faculty development program sent an email to participants explaining the purpose of the survey, and data collection occurred over a one month period. Participants received two reminders about completing the survey.

A total of 300 faculty were asked to complete the instrument, and 109 responses were obtained, equating to a 36% completion rate. The vast majority of respondents were tenure track faculty, 82.6% ( $n = 90$ ), though 28.4% of respondents had not been promoted yet. The majority of faculty responding had been at surveyed institution for more than 6 years (see Figure 1).



**Figure 1:** Percentage of faculty with careers longer than 5 years at the surveyed institution

The primary motivation behind the survey was to develop an overall picture of the degree to which participants indicated the faculty development program sessions were beneficial. To that end, we asked faculty to indicate the degree to which each of the programs they attended was beneficial using a 5-point Likert item where 1 = Not at all beneficial, 2 = Not beneficial enough, 3 = Neutral, 4 = Somewhat beneficial, and 5 = Extremely beneficial.

Since our motivator behind this portion of the survey was to determine if faculty felt the session was beneficial, we identified a performance benchmark to help us ascertain if we could conclude that participants felt the program was beneficial. Identifying a standard is as much art as science, and it is important to balance aspiration with a defensible and attainable goal (Suskie, 2002). To that end, we set our performance benchmark at 70% of respondents indicating that the session was either somewhat beneficial or extremely beneficial. Of the eight programs for which data were collected, the benchmark was met or exceeded for five programs. However, we failed to meet the standard for the remaining three programs. Table 6 shows the number of participants who responded in each program area, and the percent who indicated the program was either somewhat beneficial or extremely beneficial.

**Table 6. Number of participant respondents in each program area and percentage indicating program was beneficial or extremely beneficial.**

Program	Survey Respondents	% indicating 4 or 5
Promotion and Tenure	79	84.8
Scholarly Opportunities	67	71.7
Funding and Research Development	86	74.4
Teaching	77	79.3
Networking	73	75.3
Skill/Capacity Building	65	67.7
Publications and Awards	46	43.4
General Areas of Interest	67	64.2

### 3.2 Findings from open-ended questions

Four open ended questions were also asked of the participants. One question asked participants to identify the most helpful aspects of the faculty advancement program, a second asked about information that would be helpful to them later in their career, a third asked about what would be helpful in advancing and further developing their research, and the final question asked about the least helpful aspect of the program. We used thematic analysis to analyze these open-ended responses.

Thematic analysis is straight forward process of analyzing a variety of sources of qualitative data. The researcher reviews transcripts, marking connected statements and comments, and ultimately aggregating them up to common thematic findings. In this way, it is possible to identify a broad set of findings across statements made by numerous participants (Seidman, 2006). Through this process we identified several key findings.

As it relates to what participants felt was both the most helpful aspect of the program, as well as what would be helpful to them in the future, was the notion of networking. Participant responses indicated that learning how to network, develop collaborations, and be given opportunities to network were extremely important. For some participants, the networking opportunities provide avenues to "...share similar issues", while others felt that networking provided them an opportunity to "...hear perspectives outside their department."

A second theme was learning about options for funding, including being given opportunities to meet program managers. Given the focus of engineering faculty at a large research extensive university, this finding is not particular surprising. However, it does undergird how important grant development is in the context of the modern-day college/school of engineering.

A third finding related to advancement of faculty careers. This broad finding applies to junior, mid-level, and senior faculty and speaks to the need to provide information on how to advance through to the next stage of their career. While comments about preparing to go up for tenure were prevalent, participants also indicated that career development is an important concept, even for tenured faculty and indicated a need to help faculty "identify paths forward after tenure." Another advised that guidance was needed for mid-career faculty in helping to determine next steps, "Learning [what] different opportunities are available once tenured: what type of leadership opportunities are there, should I focus on research center[s], or admin role, or something else entirely."

Related to areas that participants felt were least helpful, the overwhelming theme related to difficulties in attending. This included the time at which programs were held, the location of events (e.g. inconvenient location), advertising of events, and the lack of multiple offerings of the same program. One participant who self-identified as a new faculty member lamented that it was difficult to find out about events and programs given the amount of email received on a regular basis.

Topics that participants most repeatedly suggested they would like to see offered, either again or as new information, focused on

- (a) funding, including proposal writing workshops, roundtable discussions with other faculty as well as external researchers, continued access to funding agencies;
- (b) research development, including building a sustainable research program, training in multidisciplinary research; developing a large scale research center; collaborative activities;
- (c) promotion and tenure/progression advancement, including guidance in navigating the process from current and past reappointment, promotion and tenure committee members and other experienced faculty; career development after tenure; mid-career specific workshops and resources, sabbaticals; and
- (d) networking and mentoring, including connecting with faculty with common interests, faculty from other campuses, researchers across industry research and development; continued networking with program directors/funding agencies; perspective on receiving mentoring; how to improve methods of mentoring.

We anticipated that review of the closed questions would inform how well specific aspects of the program met faculty expectations and satisfaction; review of open ended questions would better define a clearer trajectory in programmatic areas of importance to faculty well-being. Insights that we collected from the open-ended feedback confirmed some of our expectations regarding the relevance of current programs. At the same time it gave us a sense of what was most important to our faculty and provided a roadmap for planning agendas going forward.

Our intention is to become more connected to the different measures of faculty well-being in the development of our faculty programming. In addition to the ones analyzed in this paper, there were additional aspects of our survey that enabled us to discover the effectiveness of our specific programs and the needs for future professional development activities. After evaluating the results associated with our faculty development initiatives, we examined the data in the context of the COACHE Survey results to explore how their data aligned with results that we gleaned from the engineering faculty development assessment administered in 2015. This will enable leadership to address the issues that may arise out of the COACHE survey with specific actions/programs that are also aligned with their documented respective strategic plans. While the campus website often reports the overarching results of the COACHE survey; the academic campus leaders (e.g., college deans) will each receive a college specific report on the “well-being” of their own faculty. There are several key issues that arise in the interpretation of the results and the implementation of “solutions” to address areas of need with specific initiatives:

- The leadership reviewing the data may change over the cycle of the reporting.
- The leadership may not be able to readily translate the COACHE results into actual actions/initiatives associated with their units. This is due partially to the variations in questions, the metric of evaluation and the grouping of the disciplines in the resulting reports.
- The strategic plan for the department/college/university is developed independent of the COACHE survey.

We utilized COACHE survey to explore measures of faculty satisfaction and this gave us perspectives of the changes from 2011 to 2015 in the following five areas: (1) Interdisciplinary work, (2) Collaboration, (3) Mentoring, (4) Tenure Policies, (5) Tenure Clarity

The scale for the questions ranged from 1-5 with five being aligned with a strongly positive response. Depending on the format of the question – the responses went from:

- a) Very Satisfied (5) to Very Dissatisfied (1)
- b) Strongly Agree (5) to Strongly Disagree (1)
- c) Very Effective (5) to Very Ineffective (1)
- d) Very Clear (5) to Very unclear (1)

Given that the COACHE report changes from year to year and the questions are not consistently the same, we selected a subset of the reported areas as a starting point to frame the perspectives of the college of engineering faculty. We examined the data for the college of engineering in 2011 and 2015, the change in the reported data (delta) and the percentage change (%). While there were several statistically significant changes, we will highlight the changes in the areas associated with mentoring and tenure. According to the data there were increases in the agreement associated with the following questions in the mentoring realm:

- Effective mentoring of pre-tenure faculty in my department: 15% increase
- Effective mentoring of tenured associate professors in my department: 14.7% increase
- (The institution) provides adequate support for faculty to be good mentors (14.06% increase)

In the area of understanding of tenure policies and criteria, the clarity increased:

- Clarity of departmental tenure process (18.77% increase)
- Clarity of departmental tenure criteria: (16.15% increase)

#### **4. How feedback has/is being used to improve the program**

##### **4.1 Changing the faculty development roadmap: An ongoing process**

The analysis and implementation of the results of our programmatic survey and observations of trends depicted in the COACHE survey in the context of the college of engineering strategic plan indicate the implementation of a series of updates and positive changes. Based on our evaluation of the programs we have been conducting, members of our advisory group identified areas that we need to focus on to enhance the professional development of faculty from their respective departments. The composite of this information will provide programs that are even more relevant for faculty across the college and at all ranks. We will present some of their comments in targeted areas below:

##### **4.1.1 Sages/mentors**

- Help (network events) to identify mentors outside of department in the college
- More sharing of the practices of the very best mentors and help identifying who would be good as sage/mentor
- Some departments reported that they do not have a formal mentoring system in place for young faculty, something that is obviously an area of great need for young faculty
- Develop effective paradigm shifting approaches to faculty mentoring and peer coaching.

#### **4.1.2 Reappointment, promotion and tenure (RPT)**

- Need a form that helps track important required items & makes tallies automatically; this may lead to better strategies for correcting people who exhibit concerning patterns that may lead to RPT challenges.
- Setting realistic and achievable goals while being consistent in evaluating individual contributions is important for non-traditional RPT cases (e.g., faculty from industry)
- Getting new faculty understand to RPT from day one is critical. Need to address the lack of consistent reviews & transparent timing/procedures. There should be more consistent formal feedback after specific reviews.

#### **4.1.3 Early career faculty programmatic changes**

Preparing/planning a path for reappointment

- For over 15 years, our college of engineering has offered a four-day engineering-centric orientation workshop for newly hired tenure-track and non-tenure track professors. The College is dedicated to equipping new hires with tools to meet challenges of the critical early years of their professorial careers, with an associated reduction in the 4-5 year learning curve experienced by the majority of new faculty to the 1-2 years characteristic of “quick starters”. The quick starters term was first introduced by Boice to include characteristics that new faculty expressed such as scheduling regular time for writing and producing enough manuscripts and publications that met or exceeded their institution’s expectations, enthusiastically sharing their research with their students, incorporating their field of research in their classes, and delivering lectures at a pace that would give students the time and space to ask questions and engage in discussions.<sup>[12], [13]</sup>  
In 2017, we incorporated a 5-year development plan that includes promotion and tenure into the new faculty orientation workshop. Newly hired faculty may be challenged to understand the process within the culture of their respective departments as they begin their careers. Mapping out the mile markers along a timeline in the track to retention, promotion and eventually tenure, prepares them to effectively begin building a robust and documented portfolio to support each step in their career advancement.

#### **4.1.4 Introduction of multi-session/series on scholarly topics**

FD added a funding and research 5-session series in 2017-18 to inspire and promote the acquisition of funding for COE faculty. Interactive sessions are built upon book chapters, insightful presentations by experienced faculty ‘sages’, and include just-in-time topics and practical application and proposal writing activities.

#### **4.1.5 Modifications in the faculty development roundtable**

Faculty feedback prompted us to reconnect with specific faculty voices in the college as we move forward. A new advisory committee of senior faculty representatives from each

engineering department was formed. The specific roles of the Faculty Advancement Roundtable are to:

- Advise college of engineering associate dean of faculty advancement
- Identify and suggest innovations in faculty advancement
- Provide relevant department/discipline specific feedback on programs/initiatives
- Provide guidance on constructing a faculty development roadmap based on data driven results from COACHE wellness surveys and 2015 assessment of programs in the faculty development unit

## **4.2 Lessons learned**

The primary lessons learned in the faculty development initiative include the:

- Importance of having a routine data collection plan and outcome measurement tool in place at the outset of program development and execution
- Value of mentoring and coaching across faculty rank
- Importance of continuous assessment of programming and faculty status. While our survey was administered after more than five years of our unit's existence, it provided valuable logistics and roadmap information. We also identified one of the authors of this paper as a source of intentional evaluation and assessment, a critical element for continuous improvement for this work.
- It is important to be strategic in the scheduling of career development activities and how to make decisions on multiple offerings of the same content.
- The faculty most satisfied with agency and national laboratory visits; new faculty orientation workshop, its content, and demonstrated administration support
- Feedback: ongoing informal feedback from faculty
- Importance of gleaned wisdom from experienced faculty voices: i.e., the first faculty development roundtable advisory committee was instrumental in laying the groundwork for the development and sustainability of the inaugurated engineering faculty development office; the recently convened new faculty advancement roundtable (2 senior faculty members from each of the 12 engineering departments); input from department heads
- Instrumental in advocating policy and promotion changes for non-tenure track faculty

## **4.3 Next steps and future goals:**

1) Develop a uniform and routinized data collection plan with the objective of improving short-term decision making and long-term planning based on insights gleaned directly from timely faculty feedback. We will continue to build on the Kirkpatrick model to establish a framework for continued assessment the effectiveness of faculty development curricula at Kirkpatrick's graduated levels.

2) Incorporate a performance measurement tool in order to evaluate outcomes for successes and deficiencies in our program offerings. (*Level 2, Kirkpatrick Model*) The information gained will be used to justify the continuance, duplication or change in the core program plan.

- 3) Develop a strategy to advance research and outcomes to levels 2-4 in our practical goals. Recent evaluators suggest “beginning with Level 4 and moving backward in order to better establish the desired outcome” before planning the curriculum.
- 4) Utilize COACHE and other university-wide survey results to measure the temperature of faculty satisfaction (recruitment, retention tool, long-range program development).
- 5) Relative to difficulties in attending program opportunities, mix virtual meetings into the schedule to allow more faculty to attend when they are short on time or unable to travel between campuses. Increase our awareness of schedule conflicts and offer (1) multiple offerings of the same program; (2) accessible recorded pod/video casts of high impact / high interest.
- 6) Improve communication methods about events; introduce faculty to the recently created website for notifications of calendar events.

## **5. Conclusion**

In recent years, since the inception and formal establishment of the NC State College of Engineering faculty development office presented in this paper, interest in engineering-centric efforts designed to promote professional faculty development within engineering colleges have been increasing. Emerging leaders with a passion to provide robust programs for engineering faculty are piloting initiatives to develop faculty development offices within their colleges are finding each other through professional societies and conferences and are beginning to form cohorts and communities of practice.

Examination of the current literature reveals that there is still a limited amount of work published on a broader spectrum of faculty development programs devoted to engineering faculty. Much of the literature describes curricula that emphasize pedagogical content knowledge, teaching effectiveness and instruction development workshops/programs. It is the aspiration of the authors to contribute experiential knowledge and lessons learned that will benefit faculty development leaders and advocates and their faculty in other colleges of engineering and to encourage an expanded more comprehensive vision for faculty development.

In summary, the development of a faculty development program in the College of Engineering at NC State has provided a series of initiatives that have impacted engineering faculty across all faculty ranks, inclusive of tenure and non-tenure track faculty alike. It is critically important to assess the relevance, impact, and long term benefit of these programs to drive changes in the faculty development roadmap. A detailed assessment based on the Kirkpatrick evaluation model enabled us to explore the reactions and learning associated with the programs beginning at Level 1. The resulting improvement in the COACHE reported areas of networking, promotion, tenure, and service is a positive trend in improving the way faculty are understanding the reappointment, promotion, and tenure processes and how they are exploring options in the mentoring realm. While we cannot draw a direct correlation and/or causation between our programs and the COACHE results, we are encouraged by the data and plan to be more strategic in our benchmarking of the impact of our programs relative to the faculty well-being surveys as well as introducing new programs and initiatives that will enrich our faculty for years to come. This will enable us to come “full circle”; connecting the selection of initiatives to the College of



Engineering strategic plan, utilizing a senior faculty roundtable to insure disciplinary relevance and assessing the short and long term impact of our initiatives on faculty at all ranks in the college.

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