AC 2007-126: ADVICE FOR NEW ENGINEERING FACULTY: INSIGHTS GAINED FROM FACULTY DEVELOPMENT PROGRAMS

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Advice for New Engineering Faculty: Insights Gained from Faculty Development Programs

Abstract

It is not easy being a new engineering faculty member (either as a newly minted PhD or as a new faculty member to the university) and harder still to find one's bearings when faced with a demanding course load, the stress of demonstrating solid output from a new research agenda, and multiple service commitments. It is even more challenging to get established when the department (or university) lacks a formal faculty development program for newcomers, yet new faculty are expected to "hit the ground running." As daunting as this may feel, and much as new faculty want to "hit the ground running and just run away," there are some tricks of the trade that I culled from the literature and my own experiences that I share in this paper. These guidelines may help new engineering faculty in terms of job satisfaction and in addressing key sources of stress.

In this paper, I draw from the higher education faculty development literature and outline the merits of a faculty development program and how crucial these topics are for new engineering faculty members. I examine faculty development topics in the broader context of teaching, research, service, and personal growth and development. Key sources of stress for new faculty members relate to finding time for research, effective teaching practices, the lack of collegial relationships, inadequate feedback/recognition, unrealistic expectations, insufficient resources, the lack of mentors, and little work-life balance. In the paper, I address the following topics:

a) An orientation helps new engineering faculty become familiar with policies, support services, regulations, colleagues in the department, and faculty development resources (e.g., teaching models, resources, and workshops).
b) New faculty requires different mentors for different needs such as teaching practices and possibly a senior research mentor.
c) An academic dossier encompassing a teaching, research, and service is very important for tenure and promotion purposes.
d) The dean has an essential role in ensuring that new faculty members are socialized into the department and have a reduced teaching and service load (at first) so that they can develop solid and successful research agendas. The dean also assists new faculty members develop reasonable annual work plans.

In the efforts to gain their bearings in new positions, new engineering faculty members feel daunted in achieving a work-life balance and inevitably, the scale tips in favor of work.

As I address each topic, I examine the importance of the topic and suggest some guidelines for consideration. I also recommend some useful academic resources for new faculty. In sharing some of my tricks of the trade, I hope that new faculty will not have to personally learn all their lessons the hard way, because at times, it is easier and less painful to learn from the experiences of others.

Introduction

Universities face many broad issues such as fiscal restraint, technological changes, and international competition [1]. Universities also face issues related to how they balance research with teaching performance, assessment, and accountability. "Organizational changes must occur given the changes in *what* students need to learn, *how* students learn, *who* the students are, *when* the students can learn, *where* the students can learn, and what students can access *while* they learn" [2, p. 2]. Although Twigg wrote this over a decade ago in the context of students, the quote continues to be relevant for formal and informal engineering faculty development programs.

In this paper, I draw from the higher education faculty development literature and outline the merits of a faculty development program and how crucial these topics are for new engineering faculty members. I examine faculty development topics in the broader context than simply teaching. Key sources of stress for new faculty members relate to finding time for research, effective teaching, the lack of collegial relationships, inadequate feedback/recognition, unrealistic expectations, insufficient resources, the lack of mentors, technology, isolation, and little work-life balance. Such issues, if not addressed, can further isolate and disillusion faculty. In light of these challenges, I was interested in examining the topic of faculty development needs and program content.

The paper is organized as follows. Following a brief overview of the tension between the scholarship priorities of teaching and research, the paper examines the scope of faculty development programs. Then, the paper addresses the topics, benefits, and challenges of such programs as well as critical success factors. This is followed by an overview of sources of stress for new faculty and different needs that academics have at stages of their careers. The paper emphasises the importance of mentoring in faculty development programs and concludes with some tricks of the trade, that I learned through my experiences.

Tensions between Scholarship Priorities

Boyer discusses four kinds of scholarship priorities for a professoriate – the *scholarship of discovery* (research), the *scholarship of teaching* (pedagogy), the *scholarship of practice* (application), and the *scholarship of integration* (critical analysis and interpretation) [3]. Most universities focus on the first three priorities - research, teaching, and service. It is an ongoing challenge for academics to balance their efforts in these three areas, particularly with the pressures to "publish or perish." Higher education has historically been known to be slow to change and described as "highly democratic, yet glacial in its pace" [4, p. 6]. Within this cultural context and with the strong emphasis on research in terms of scholarship priorities, some aspects of faculty development can be overlooked.

With the growing emphasis on research, especially for teaching universities, the commitment on faculty development services warrants more attention. With the increasing number of distance education programs and use of blended delivery programs in "bricks and mortar" institutions, it increasingly important that meaningful faculty development apply to *all* instruction modes, including engineering.

Teaching is a scholarly undertaking and as important as research so we need to have as high expectations of it [5]. However, teaching is severely undervalued [1], particularly since the incentives and reward structures favor research and because research is easier to assess among faculty and in tenure reviews. Common issues pertinent to teaching include: student/teacher ratios, teaching methods, workload, the role of teaching assistants, and the balance between research and teaching [1]. Furthermore, if a university's culture is such that teaching is perceived to be undervalued, securing faculty buy in for a faculty development program can be a struggle [5], regardless of whether the faculty development scope is narrow, and focuses on teaching, or broader, and encompasses all the scholarship priorities.

Scope of Faculty Development Programs

Traditionally, faculty learned to teach by trial and error through the "on the job training" of taking courses [6]. These days, more universities are establishing such programs to help new faculty become established.

Faculty development is a complex and important process [7] and serves to enhance growth and development by promoting *all* forms of scholarship throughout one's career [8]. Faculty development programs are limited only by the university's scope, mission, and culture [5]. Individual differences, diversity, and seasons of the career need to be considered in faculty development programs [8]. Such program should focus on faculty needs and it is prudent to conduct a needs assessment first [5]. Furthermore, some faculty development needs are unique to the delivery mode.

Academic institutions should not assume that everyone shares the same understanding of the term faculty development [5]. In the most narrowest definition, faculty development focuses on teaching [5]. A broader interpretation indicates that faculty development "promotes improvement in the academy in large part through helping individuals to evolve, unfold, mature, grow, cultivate, produce, and otherwise develop themselves as individuals and as contributors to the academy's mission" [5, p. 465]. Some programs focus faculty development efforts on new faculty where the term "new faculty" refers to newly minted PhDs and those new to a university [9].

Faculty Development Program Topics, Benefits, and Challenges

Since faculty development spans the scholarship priorities, a variety of topics can be covered, regardless of discipline. The main program topics include:

- University policies and regulations
- Support services
- Information technology services
- Who's who in the departments
- Course development
- Teaching models, online resources, workshops, and seminars that address all modes of instruction
- Formative and summative assessments
- Networking, mentoring

- Diversity
- Research, and
- Personal development.

Most faculty development programs focus on specific skills and problem areas and rely on voluntary participation whereas other universities have obligatory faculty programs. Some think that good teaching depends on early training so they offer graduate courses in teaching higher education. For example, the University of British Columbia in Canada offers a yearlong 150-hour certificate course. Some universities in the United States have also adopted the certificate model and certificates to teach are mandatory in the United Kingdom and Norway. However, others argue that courses don't make for better teachers and that this distinction further separates research from teaching; uniform teaching detracts from how different disciplines should to be taught [1].

Benefits and challenges of a faculty development program can be grouped by stakeholder group. For example, the key stakeholders relevant to faculty development include the institution (administration), support services, new faculty, existing faculty, and Information Technology. In addition to the value derived from covering the breadth of topics outlined earlier on faculty development programs, the benefits of a faculty development program for new faculty include:

- Academic productivity and well-being
- Improved morale
- Increased career satisfaction
- Teaching, research, service effectiveness

A benefit of a faculty development program for the institution is that administration can get to know the new faculty and their areas of research, teaching, as well as service interests. Feedback from new faculty at such sessions may help reinforce the investment placed into faculty development programs. From a support services perspective, a new faculty development program can help staff convey important information to new faculty and ease some of the administrative red tape that new faculty may encounter. New faculty orientations may give existing faculty opportunities to develop mentoring and networking relationships down the road.

Faculty need technology competences, so that they can adapt to new teaching style and demanding and time consuming learning environments [7]. A recent survey of Chief Information Officers in education indicated that of their top 10 Information Technology strategic concerns, faculty development, support and training was up from the year before from the number six position to the number five position [10]. The Information Technology department can ensure that technology needs are being met and the requisite training initiated as needed. New faculty may raise suggestions on technology platforms, software, and related innovations that could be addressed according to the university's practices.

Faculty development programs do involve some challenges. Given the glacial pace at which change can be enacted in academic settings, there may be great resistance to introducing such programs, let alone funding them, especially if the administrators in charge of the funding decisions are not supportive of such programs. Faculty programs are far from mainstream within

all universities and may be marginalized. Funding for such programs may be limited and their long-term future at the university in question. At some universities, the programs exist in a fragmented structure and various departments and faculties may offer elements of such programs, or not at all. Turf wars and silos within the institutional structure can compound issues that faculty development programs face in terms of viability. A harsh reality of any organization is that "knowledge can be power" and the culture may not be conducive to sharing. Furthermore, if the university culture is such that the balance of scholarship priorities has tipped to research, then teaching and related faculty development programs may get short changed. Some have overcome such fragmentation issues by using a consortium, cooperative, or distributed model approach as well as by assessing alignment in terms of the faculty perceived balance on teaching and research [5].

Critical Success Factors of Faculty Development Programs

Our review of the literature suggests that the following represent salient critical success factors of faculty development programs from an administrative, technological, and content/process perspective [7]. From an administrative perspective, it is vital to do a needs assessment first and follow up on progress being made [7]. Then, as the program is developed and launched, it must be followed by a shared vision, responsiveness to faculty needs, involvement of faculty in planning the program, and ensuring that there are clearly defined and communicated policies is essential. Administration should also ensure that faculty needs in terms of understanding the technology are addressed. The self-actualization and developmental psychology view of faculty development supports efforts to pursue directions that are fulfilling and meaningful [5]. Regardless of deliver mode, faculty development, frequently involve staff to coordinate the program, ensure that equipment is maintained, and faculty support needs are met [11].

In terms of content and process, programs are more effective when faculty is involved in the process and content [7]. It is important to provide meaningful incentives and long-term goal achievement opportunities to faculty. Program content should be tied directly to content areas, practical sessions, and beneficial to immediate needs [7]. Studies show that faculty development services offered at times convenient to faculty and in different formats resulted contributed to program success. It is important to have well developed courses for faculty to attend. The most desirable mode of training is workshops and individual meetings with faculty development staff and the least desirable includes self-teaching, books, audio/videotapes, and formal courses [7]. Faculty indicates that they would attend training if they were given time off to do so and peer pressure was least likely to be a factor to attend [7].

Once a program is in place, "expecting faculty to attend training on their time means that only those who are truly motivated and have an interest will pursue the training" [7, p. 198], so there are other issues to contend with. Furthermore, mentoring is positively associated with intrinsic factors such as career satisfaction and job satisfaction [12].

A culture to support faculty development is vital. New faculty that feel engaged, less isolated, and well supported in terms of teaching effectiveness and instructional support are essential to a university's ability to achieve its strategic goals. Overall, successful faculty development programs make the connections between curricula, pedagogy, and technology.

Sources of Stress for New Faculty

Coupled with the interpersonal and cultural issues (resistance to change and knowledge and power related issues), concerns on education pedagogy and faculty workload need to be considered for faculty development purposes [6]. Work aspects that are important to new faculty include the intellectual/collegial ethos of one's department, teaching and research funds, a reasonable workload, and an understanding of the institution [9]. The following aspects do not appear to have changed over the years and continue to be sources of stress:

- The lack of collegial relationships
- Inadequate feedback or recognition
- Unrealistic expectations
- Insufficient resources
- The lack of mentors
- Work-life imbalance.

Different Needs for Different Stages

Individual differences, diversity, and career stage need to be considered in faculty development programs [8]. From a development perspective, assistant professors may need help transitioning from graduate school to the role of an academic so activities relevant to them may include mentoring and peer consultation with an emphasis on course reduction and reduced service commitments in the first year or two as they develop productive research program and teaching credibility [8]. One way of helping new faculty may be to consider team teaching or to ensure a new faculty member received early and ongoing feedback on teaching practices.

In terms of research, it may help new faculty to be aware of university and government research grant opportunities, perhaps through the Research Office. The Research Office may also be familiar with industry grant opportunities that are often matched by government. Preliminary seed research funding for a new academic can be very helpful in boosting a new academic's confidence as well as helping them demonstrate incremental research achievements to subsequently apply for larger grants. Starter grants are also a good way for new faculty to engage graduate students in their developing research programs. As a new faculty member secures research grants, this can help them negotiate teaching release times.

Another way of developing a new research agenda is to collaborate with others. Assistant professors could peer mentor each other and collaborate on grant applications as well as academic publications. New faculty could consider doing research within their discipline as well as research in the realm of deliver modes. For example, my discipline is project management and I collaborate with a senior academic whose expertise is in distance education. Together we have published papers on project management topics in the distance education context.

Department heads have a vital role in ensuring that new faculty receive a well rounded orientation that includes faculty development services. Heads also have a role in assisting new faculty develop their research programs [8]. Departmental heads' support and guidance is crucial in the early years on the job [9]. As the department heads are aware of the development and workload

matters in relation to all faculty members, they are ideally suited to coordinating how faculty development needs are addressed. For example, if a new assistant professor needs a reduced course/service commitment for the first year or two, the department head can assist with this, e.g., by bringing in sessional staff. If the aim is to reduce the service commitment for a new junior faculty member, it could be an opportunity for the head to discuss how a senior service role may be worth considering by an associate professor in the department.

Associate professors may benefit more from development services on effective mentoring and administrative support skills and on the service role [8]. For example, associate professors could be mentored by full professors regarding senior level service roles. Some associate professors may be well suited at this stage to accept senior editorial roles with professional associations.

Full professors may benefit from development services on a broader service role and may require assistance in dealing with burnout and stagnation [8]. Some full professors who have led productive research roles could mentor assistant and associate professors with grant application processes as well by working on publications collaboratively. Some full professors experiencing burnout and stagnation may welcome mentoring opportunities as ways in which they can share their expertise with junior faculty.

Regarding the service role, in addition to committee work, it may help new senior faculty to consider serving as adjunct professors at other universities. For example, some universities hire adjunct professors in a research capacity and others offer adjunct teaching opportunities.

Regardless of an academic's stage, a complete teaching, research, and service dossier serves one well for annual performance reviews, promotions, tenure, and when seeking new academic and industry opportunities. From personal experience, I found that there were many useful examples of dossiers on the Internet and I spoke to senior academics for their advice on what to put into a dossier. I found it useful to start my dossier early in my career and to maintain it on a regular basis, for example, every semester. By updating my curriculum vitae, I also gained an ongoing sense of accomplishment as I tracked my scholarship activities. The dossier was also useful in helping me identify gaps in my scholarship and goals for next year. A dossier can also be useful in identifying areas for improvement (although this required me to really try to be objective). One of the hardest things I had to learn to write was my teaching philosophy. I think this was difficult because I had focused on discipline specific content at university but had not taken courses in teaching. By reviewing examples on the Internet, I found some useful ones that allowed me to reflect on my teaching philosophy and document it accordingly. In particular, I found that the dossier helped me review my research program and from time to time, identify some changes in direction.

Mentoring

The theme of mentoring was prevalent in the faculty development literature [12, 1, 8, 9]. Different mentoring relationships are appropriate for different faculty development needs. Primarily, it is important for faculty members, department, heads, and university to acknowledge the importance of mentoring. It is important for the university and department heads to support and sustain such programs.

Mentoring can be both a formal or informal initiative. Mentors can assist new faculty in the areas of scholarship. A mentor that excels as a teaching mentor may not excel as a research mentor. New faculty members can benefit from peer mentors and senior mentors. New faculty members may not always have a mentor from within their department. Some departments are small and in other cases, certain mentoring skills may be available in other departments.

As a mentoring relationship starts, it is important for both parties to establish some ground rules, review expectations, and discuss mentoring needs. Some mentoring relationships take place through phone calls and others are conducted face to face. In some cases, a mentor can be a great resource on an as needed basis. The key is for the new faculty members to know that there are others they can turn to for guidance and support. Furthermore, mentoring relationships change over time so it helps to assess the relationship after a few months. It is important to recognize the mentoring role that faculty undertake as part of their workload and in conducting performance assessments.

Tricks of the Trade

What have I learned from my experiences?[1] Since faculty have different learning styles, different faculty development approaches will help [13]. For example, visual learners may prefer workshops and reading material, whereas aural learners may prefer a workshop or audio material.

Some new faculty members may find them themselves in a situation where a faculty development program does not exist, sessions may be delayed, or there is just no time to attend the sessions. New faculty members should not let this daunt them. There is no reason that they cannot improvise and access many resources (including online resources) to come up to speed quickly. New faculty members can use some of the material in this paper to develop their own faculty development program. A preliminary list of some resources follows and as faculty engages in discussions with colleagues, they can develop their own set of resources.

- The Chronicle of Higher Education offers a wealth of news, information, resources, and advice for faculty and administrators. Some of the services are free and others require a subscription. It is well worth the money http://chronicle.com/
- The Academy of Management offers a number of list servs by academic discipline that reach a membership of over 16,000 worldwide. A list serv that may be of interest to engineering faculty is the Technology and Innovation list. In addition, the Academy of Management has a Production and Operations management division http://www.aomonline.org/
- The Sloan Consortium offers a wealth of online educational resources and I found it especially useful because I teach courses online http://www.sloan-c.org/
- Flourish is a very useful site to and through regular emails and tips, it helps me stay motivated on my academic writing, especially on days when I just do not feel like writing http://www.wendybelcher.com/pages/FlourishNewsletter.html
- Tomorrows Professor provides regular email summaries on best practices related to the scholarship priorities. I really enjoy these emails as they give me a chance to read how others have handled challenges related to scholarship. The summaries also

[1] In the presentation, I will elaborate on this with examples.

include references to the actual papers and save me having to read many papers to get to the essence of the key points
https://mailman.stanford.edu/mailman/listinfo/tomorrows-professor

- Two excellent resources that I wish I had known about as a graduate student are the ones by Frost and Lang.
  - P. J. Frost and T. M. Susan (Editors), vol. 1, *Rhythms of academic life: Personal accounts of careers in academia*, Sage Publications, Thousand Oaks, California, 1996.
  - J. M. Lang, *Life on the tenure track*, vol. 1, Johns Hopkins University Press, Baltimore, Maryland, 2005.

I also found that there were resources available to me through professional associations.

Much as new faculty members consciously strive to maintain a balance between work and home life, the balance inevitably tips in favor of work. In part, this can be attributed to the steep learning curve that any new environment involve. In part, this can be attributed to wanting to do everything well and not wanting to say "no." My personal experience was that learning to say "no thank you" to some opportunities and striving to do fewer things, but doing them well were two strategies that helped me. Learning to say no was one of the hardest things to do. Some advice that I received years ago from a senior faculty member was that I should "keep my head down (focus on my work) and to not take on too much in the service realm at first. My dean was very supportive in this regard and my efforts to apply for starter grants, achieve small wins, and then a larger government grant, paid off in about two years. Although this example may not demonstrate work-life balance in the short run, it does in the long run. By acknowledging that for me personally, work would take precedence for the first few years, I did not fight the imbalance.

Now that I am better established in my current academic role, I have a bit more latitude to balance the scale. I also found that maintaining some consistency with my physical fitness level was important for my mental and physical well being. Regardless of how busy I was some days, I always tried to ensure that I fit my running into the schedule.

Conclusions

Although a range of budgetary, economic, pedagogical issues are being addressed, faculty development has received less attention. Faculty development tends to be done by outsiders, centrally, or within individual departments (if at all). Creating a culture to support faculty development programs is vital for their success. Sadly, such cultures may not always prevail.

As discussed in this paper, faculty development programs are beneficial but also involve some challenges. The most effective faculty development programs span the scholarship priorities and the department head plays a key role. Mentoring is an important aspect of faculty development as is personal growth and development. An effective professional and social milieu has a tremendous effect on productivity and well-being [8]. When a university or department does not place the requisite efforts on faculty development, they risk isolating valuable resources.

Regardless of academic stage, for faculty members who have just joined a new university, if a faculty development program does not exist, remember the words of the well known Nike phrase and develop one for yourself- just do it! There are many resources and experienced academics and staff in the institution that can help new faculty members adapt to the new setting.

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