Maximizing Your Productivity as a Junior Faculty Member:
Balancing Research, Teaching, and Service

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Abstract

The majority of new engineering educators are confronted with two daunting challenges: (1) wisely select the tasks on which they spend time and energy and (2) effectively manage their time and energy in order to maximize their productivity. In this paper, the authors suggest seven “tricks of the trade” designed to help a new faculty member achieve their tenure and/or promotion requirements while balancing their research, teaching, and service workloads. These seven strategies are aimed at effective time and task management, coupled with professional networking, to help a new engineering faculty member navigate their careers along a path to success.

1 Introduction

One of the greatest challenges associated with transitioning into a position, as a new engineering professor is the challenge of time and task management. Rather than having two to three tasks at any given time, the new professor is likely to have eight to ten tasks that need addressing within a given workday. In Reis’s interviews with over 70 faculty members, he found that all were challenged to find creative ways to manage the large number of tasks on their “plates”, that is complete them, do them well, and still find time to sit, think, and plan [1]. A second, and often equally dramatic, challenge associated with succeeding as an engineering educator is the challenge of knowing how to prioritize, so the right kinds of tasks get onto the “plates” in the first place.

In Boice’s study of several first-year faculty members who had excelled in teaching, research, and publishing, he found that these faculty members had the ability to “balance” their workloads [2]. That is, they (i) set realistic time limits on teaching preparation, (ii) spent about 4-5 hours per week on scholarly writing, and (iii) spent about 4-5 hours per week networking professionally (on and off campus). In this paper, the authors provide seven strategies, or tips, for new engineering educators (NEEs) that can help them manage their time and tasks, as well help them to select which tasks they are willing to put on their “plates”. (The “tricks of the trade” presented in this paper can be found in various forms in several texts [1]-[4] for new and experienced faculty. We recommend the NEE own and read these texts frequently.) Our seven strategies are titled: Chart a Course; Ask for Help; Publish, Publish, Publish; Be a Team Player; Just Say No; Practice Makes Perfect; and Slow and Steady Wins the Race.

It should be noted that this paper arose from a request by the professional development coordinator in the Bagley College of Engineering at Mississippi State University. When NEEs are hired in the College, they are assigned mentors. Furthermore, the College sponsors a variety
of workshops and brown bags seminars on instruction, grant proposal preparation and professional development during the faculty members’ critical first years. We were approached by the professional development coordinator to address the NEEs and specifically provide instructional “tricks of the trade”. Mississippi State University, Mississippi’s land-grant research university, places a great deal of emphasis on the research productivity of the engineering faculty, in addition to their instructional effectiveness. Therefore, we were charged with helping the NEEs become effective instructors without overly distracting them from building their fledging research programs. This paper should be read with this background in mind. (NEEs at institutions with more focus on instruction can benefit from this paper too. In these situations, the NEE’s research plan may be focused on educational research, professional development, or service activities. Nonetheless, the NEE is expected to progress efficiently toward their institution’s goals while disseminating their scholarly achievements, whether they be technical research, educational research, instructional materials, or service activities.)

2 Chart a Course

Write a research plan. The exercise of writing a research plan can be invaluable. It helps you focus and make decisions about what area of research best fits your expertise and personal interests [3]. Typical research plans will span a period of around 5 years [3][5]. Many people include theoretical or basic research components, as well as identifying application areas where the theoretical result can be applied. The basic research components can often lead to more publishing opportunities, while the application components can typically lead to more funding opportunities. One approach to developing the applications component of your research plan is to brainstorm a list of applications that might have a remote chance of complementing your area of specialization. Ask more experienced researchers to comment on the potential feasibility, collaborators, and funding of these applications [6].

The research plan should be a working document. You can “cut and paste” from your research plan when developing research proposals, for example an NSF Career Proposal. You can also use it when developing white papers and visiting funding agencies. During the first couple of years as a professor, it often seems like deadlines are too short. However, many Request for Proposals (RFPs) are cyclic; for example, a particular NASA program might have a scheduled release of RFPs in January every year. A more senior professor has grown accustomed to this cycle and knows to prepare long before the RFP is actually released. However, the junior faculty is caught unaware. Having a research plan on which the junior faculty can build a proposal is extremely advantageous in these situations.

In today’s high-pressure academic environment, many faculty feel desperate to obtain large grants to support their research program. As a result, junior faculty can end up being pulled in many different directions by well-intentioned senior faculty and administrators. For example, consider a case where a Request for Proposals (RFP) is released from a federal agency and a senior faculty member decides to put together a team to write a proposal to respond to the RFP. Oftentimes, the newer junior faculty will be approached to join the team. By referring to their research plan, the junior faculty member can assess whether or not the RFP is an opportunity that matches their personal research goals. This approach can help keep the faculty member stay focused and strategically expend their time and energy.
3 Ask for Help

Professors often expect themselves to have a special genius, allowing themselves to work alone, without help [2]. Don’t be afraid to ask others for help! Ask more senior faculty if they will loan you their lecture notes, old homework sets and solutions, old tests, example syllabi, etc. You may or may not want to vary the materials to meet your needs. For example, ask if the solutions were distributed, so you can make adjustments on how you utilize the materials. Also, ask if your department has boilerplates for syllabi, etc. If you are planning to use networked course management software, e.g. WebCT or Blackboard, ask for help. Either attend a workshop to learn about the software or ask a more experienced faculty member to spend an hour to help you get started. The more experienced user will be able to provide you with tips on the best features of the software as well as pitfalls to its use. All of these resources can help you get up to speed in your teaching responsibilities and minimize your learning curve.

In terms of your research tasks, again ask others for help. Ask more senior faculty if they will show you recently submitted proposals, example budgets, requests for bids on equipment purchases, etc. Ask your office of sponsored programs for boilerplates of budgets, statements of budget justifications, descriptions of facilities and resources, etc. These can be very helpful in reducing the ramp-up time in your proposal writing. Once you have written a draft proposal, ask others to read and critique it. Ask people who have been successful at obtaining funding, particularly from the agency to which your proposal will be submitted. This requires your proposal draft to be written ahead of schedule, so you can provide your internal reviewers with enough time to genuinely critique the proposal and provide yourself with enough time to revise the proposal. Also, ask for help with your manuscript submissions. Ask a colleague in your research area to review your manuscript before officially submitting it to a journal. This type of internal review can cause a couple weeks of delay. However, considering the fact that many engineering journals can take several months to years for a review, the internal review can often significantly reduce your manuscript’s time to publication.

Also, anytime you encounter a problem, whether it is related to teaching, research, or service, ask for help. For example, if you are encountering a problem suspected cheating in a course, talk to your department head and ask for advice. For example, if you are having a problem with motivating your graduate students to be more productive, talk to a more senior faculty member who is successful in this area. They may be able to provide you with some “tricks of the trade”.

4 Publish, Publish, Publish

Set publishing goals for yourself. Whether we like it or not, at most universities, the quantity of publications is a substantial metric for tenure and promotion. Read your university’s tenure and promotion documents to get an idea of how many publications and the types of publications that you will be expected to have (conference proceedings, journal articles, etc). Also, ask to see the tenure and promotion packets of the most recently tenured faculty in your department. Their packets will help give you an idea of how you will be expected to perform. Of course, always keep an eye on the national expectations for your profession; meeting those expectations will help keep you marketable for positions outside your present university.
Once you have set goals for yourself, set deadlines for yourself. Particularly, set deadlines for submitting manuscripts to journals. Conference publications, proposals, and teaching duties will all inherently impose deadlines on you. It will be very likely that journal manuscript submissions will be “pushed to the back burner”. Make yourself meet your deadlines for this very important task.

Schedule time for your publishing tasks, i.e. writing, editing, creating figures, etc. Whether it is 1 hour each day or a 4 hour block during a particular day of the week, having a regularly scheduled time for publishing is a necessity if you are to meet your goals. Begin writing manuscripts early, while the task or project is on-going; do not wait until you feel the work is near completion [2]. Simply, write about the project during your set-aside time. In addition, this time should be treated as special time that cannot be trumped by other work obligations. You should not miss this time for any reason other than a reason you would miss your class lectures. That is, most professors would not miss a class unless it was truly urgent business, illness, or some other significant emergency. Your publishing time should be treated with the same respect.

5 Be a Team Player

Join research teams. In larger institutions or departments, there are likely several senior faculty members pursuing similar or related research topics. These faculty members are good candidates with whom to partner, learn, and collaborate. In smaller institutions and departments, the NEE must “cast the net” wider. Potential team members can be found in related departments on your campus, interdisciplinary research groups in university-level research centers, or collaborators at other institutions. Use your personal networks at your research conferences to identify potential collaborators and research team members.

More senior faculty members will most likely have more money, have more publications, and be more widely known. This will enable your team to have a higher probability of getting funding, etc. In addition, the more senior faculty will have more experience with managing graduate students, dealing with equipment problems, etc. By working closely with these individuals, you can gain similar skills. However, use your research plan to keep your teamwork in balance with your personal goals.

Often, new faculty members will have opportunities to join various teams. How does one choose? Several factors should be considered. First, how well does the team work together? Are they genuinely cooperative? Are they trustworthy? These questions can only be truly answered by experience; however, their reputation and observing the team in action can help guide you in your decision. Second, how does the team measure success? Do they measure success by funding, by journal publications, by patents, etc? If the team’s goals do not align with your goals (and your tenure and promotion expectations), then the team might not be a good match for you. Third, how successful is the team? For example, if the team measures success by funding and journal publications, check to make sure the team has a history of (or a realistic potential for) success in these terms.

A critical factor to consider when conducting research in a team is “ownership”. Take care to have some aspect of the research project for which you are responsible. Negotiate a plan in which your responsibility can be reported on your annual evaluations and your tenure and/or
promotion application. For example, check with your department head and with your tenure and/or promotion documents for the means by which principal investigator (PIs) and co-PIs are credited. Is there a means in the application for you to report percentage of responsibility on a contract? If so, negotiate those terms with your co-PIs during the proposal development. Likewise, if you are to be a co-PI on one proposal, then ensure your ability to be PI on another proposal. Additionally, ensure that you are not always the latter author on publications; also work toward publications in which you are the first author. The key is to participate in a research team that is mutually beneficial to all members. As a junior professor, you must review your tenure and/or promotion expectations and make certain your activities in the research team are helping you to meet those expectations.

6 Just Say No

New faculty members tend to be approached for far too many service activities. These can drain your time and energy, with relatively little payoff when it comes time for submitting tenure and/or promotion applications [2]. Strategically select your service activities, e.g. one associated with students, one at the departmental level, one at the college/university level, and one professional. Try to choose ones with minimum workload and maximum visibility. Stick with the same ones for a few years; this will reduce your learning curve time. One of the hardest things for many new professors to learn is that they can say “no”. Of course, you want to be diplomatic. It can be hard to say “no”, especially if you truly enjoy this aspect of your job. One good strategy is to never say “yes” immediately. Say something like “That sounds interesting. Let me check my schedule and get back with you.” This enables you to really think about the pros and cons of the service activity. Whether you decide “yes” or “no”, always follow up with an email or phone call.

Choose professional service activities that will benefit your career. For example, reviewing journal manuscripts is a useful way of staying abreast of new technical developments in your area of expertise. Rather than simply reading articles, you can use the manuscript review as a service activity. Another example, serving on a proposal review panel can be an extremely valuable experience to improve your own proposal writing skills. Professional service can be an excellent tool for your own professional development.

Another strategy for service activities is to choose a theme, e.g. increasing the participation of underrepresented groups in engineering or increasing the quality of your graduate program. Choosing a theme that you feel strongly about can greatly help you decide which service activities to say “yes” or “no”. In addition, when it comes time to submit your tenure and/or promotion packet, your service activities will be more noteworthy; rather than being a hodgepodge list, they will tell a more meaningful and memorable story.

7 Practice Makes Perfect

Identify 3 to 4 courses to teach, e.g. one core undergraduate level course, 1 to 2 split-level courses, and one graduate level course. These courses should be associated with your research area. Teach these courses repeatedly for your first 2 to 3. You will eventually reduce your lecture preparation time, and you will begin to be able to hone your teaching skills, e.g. experimenting with different teaching techniques, such as active, cooperative, and problem-
based learning [7]-[11]. Make an agreement with your department head/chair that you’ll get these courses for 3 to 4 years. Eventually, you will need to liven things up with some new courses, but this strategy will greatly help you in your early years as a professor.

By having a teaching portfolio that is balanced (undergraduate, split-level, and graduate), you can demonstrate your ability to teach at all levels. In addition, teaching the core undergraduate course and split-level course are often seen as a sign of being a good citizen of your department. A side benefit to teaching these courses is that they can be a great opportunity for recruiting new undergraduate and graduate research assistants. The specialized graduate level course is an opportunity for you to ensure that the graduate students in your research team are well prepared to do research in your area of specialization. After 2 to 3 years of teaching these courses, then developing other specialized graduate courses can be an excellent opportunity to grow your research expertise in a new direction.

8 Slow and Steady Wins the Race

Grow your research program slowly. This includes the number of graduate students that you will include. Again, your research plan can be used here to determine the direction of your research program. Don’t get caught in the trap of feeling as if you must mimic your Ph.D. advisor quickly. Remember that it probably took them many years to grow their research program into what it was when you joined it. Having unrealistic expectations for yourself can quickly lead to burnout. Taking on too many graduate students can have a negative impact on your research program. You can end up spending all of your time trying to manage the students, where no single student ever gets your full attention. Also, be very selective in incorporating new graduate students. A truly good graduate student can be a big payoff in terms of productivity, publications, and personal satisfaction. However, just one bad graduate student can drain you of your time, energy, money, and patience. Typically, you do not want to accept students into your team unless they have first proven themselves in the classroom, in terms of intelligence and work ethic.

Growing a new research program also depends on the type and amount of start-up package available to you. Start-up funds should be used for just that … starting up activities. Do not spend these funds on items/activities that would be considered maintenance activities, such as travel to conferences to present your research findings. Some other source of funding should be used for these types of activities. Instead, if your going to spend start-up funds on travel, use it to visit funding agencies or to attend workshops to learn new methods/techniques in your area of specialization. Another example would be your need for an RA during your first year. If your start-up funds are limited, try getting your student funded on a TA, and utilize “thesis hours” for research-associated tasks. These issues tend to be university-specific, so again, ask for help. One strategy is to talk to other faculty members in your department or college, for example those at the point of transition between Assistant and Associate Professor, about how they wished they had spent their start-up funds. You can gain from their experiences.

9 Conclusions

In summary, NEEs are confronted with two daunting challenges: (i) wisely select the tasks on which they spend time and energy and (ii) effectively manage their time and energy in order to
maximize their productivity. In this paper, the authors have suggested seven strategies that can help a new engineering faculty member meet these challenges. These include creating a long-term research plan; asking other faculty members for help; setting publishing goals and deadlines, and setting aside weekly timeslots dedicated to that task; joining teaching and research teams; learning to say “no” to opportunities that are not aligned with your career plan; reducing your teaching preparation time while learning to be an effective teacher; and having realistic expectations about growing a research program.

References


Biographical Information

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