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The Role of Scholarship for Industrial Technology Faculty

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Introduction

Many faculty members with Masters and Doctoral degrees have chosen Industrial Technology (IT) for their higher education career due to its multidisciplinary nature and flexibility in teaching, scholarly activities, and service not afforded by other academic disciplines. These faculty members are attracted to Industrial Technology discipline because of its emphasis on teaching, student success, and applied technical research. However, the advancement of core knowledge in the Industrial Technology discipline and qualifying responsibilities for a career in higher education demand faculty to develop a research agenda and pursue scholarly activities such as conducting applied technical research. Additionally, IT faculty must be able to develop their teaching and research skills in order to meet the needs of Industrial Technology students. Industrial Technology scholars and leaders should provide mentoring systems and opportunities that enhance the achievement and retention of successful Industrial Technology faculty. This paper will provide effective strategies for Industrial Technology faculty who wish to successfully gain tenure and promotion in the higher education environment.

Importance of Research in Industrial Technology

Traditionally, academic programs in Industrial Technology grew from Industrial Arts programs, where a heavy emphasis was placed on the teaching of technical skills (Zargari and Brauer, 1998). To meet the requirements of industries for skilled employees, industrial arts faculty were primarily engaged in teaching.

Contemporary Industrial Technology programs are designed to prepare technology managers who are able to function in business, industry, government, and education. IT program curricula are currently focused on a balance of subjects from the fields of engineering and management with an emphasis on the development of technical management knowledge and skills. Development of advanced technical management knowledge and skills mandates that Industrial Technology faculty engage in discipline related research.

Although scholars agree with and applaud the teaching emphasis, they argue that effective, relevant, and current teaching must be accompanied by research or scholarship for two primary reasons: (1) to understand and advance the core knowledge in the Industrial Technology discipline; and, (2) to satisfy the qualifying responsibilities for a successful career in higher education.

For industrial technology educators to help students develop their professional expertise, research efforts should be directed toward the most important issues facing the IT discipline. Pursuing scholarly research can help facilitate a communication of purpose among scholars and practitioners in the discipline of industrial technology. By conducting basic and applied research, professionals can enhance the visibility of industrial technology programs at the national level. Believing that engagement in research is not only personally and professionally rewarding but also increases teaching effectiveness, Kicklighter (1986) pointed out that, "Research is a primary function of professorship" (p. 10).

The dynamic and application nature of Industrial Technology

programs mandates that IT professionals constantly engage in the development and transmission of new knowledge and discoveries. Developing research agendas and conducting research that are personally and professionally rewarding will help practitioners develop their teaching skills, contribute to the production and dissemination of knowledge, and remain on the cutting edge of the profession (Flesher, 1997). Zargari and Coddington (1998) state that, "teaching begins with the teacher's understanding of the subject taught; therefore, those who teach must be immersed in the knowledge of their discipline" (p. 8). According to Boyer (1990), "Teaching can be well regarded only as professors are widely read and intellectually engaged" (p. 23). Sinn (1998) refers to the "core knowledge of Industrial Technology being organized and systematized" (p. 11). Rapidly changing technology requires IT faculty to be actively engaged in conducting research on their discipline in order to remain on the leading edge of the profession.

Role of Research for Tenure and Promotion in Industrial Technology

Some educators believe that they can improve their academic qualifications by active engagement in the discipline of Industrial Technology, collaboration with industries, studying relevant literature, attending workshops and professional conventions without production of scholarly work. Although the aforementioned activities are important factors contributing to faculty members' professional development, research and inquisitiveness is a prerequisite to creation, collection and dissemination of knowledge in any discipline. Additionally, tenure and promotion are granted to faculty members in the context of the higher education system that places an emphasis on scholarship. A recent survey of Industrial Technology academic programs throughout the United States indicated that approximately 50% of faculty members were either at the Assistant or Associate Professor rank

(Zargari, Patrick, and Coddington, 2000). From this survey data, one might conclude that these Industrial Technology faculty members must be actively involved in research, teaching, and service to meet the requirements for tenure and/or promotion.

Tenure and promotion are granted on the basis of criteria established by each academic department, college/school, and university. In Industrial Technology programs, like many other disciplines, consideration of teaching is a significant factor in the decision of tenure and promotion. Teaching is judged by a number of factors including student and peer evaluations, advising, course/program development, use of technology, development of course materials, etc. However, while teaching carries the most weight in the decision of tenure and promotion (Bott, 1999), very few colleges and universities use teaching expertise as the sole factor for making judgements on tenure and promotion. Classically, tenure and promotion decisions have also included consideration of performance in research/scholarly or creative activity and service. The data available on faculty evaluation indicate that the criteria often used to evaluate faculty performance are teaching, scholarship, and service (Bott, 1988; Christofferson and Newitt, 1994; Dugger and Paige, 1988, and Israel and Baird, 1988).

Research Defined

Webster (1997) defines research as "deep study or investigation; the quest for new information through examination of source material." Boyer (1990) explains that the term "research" was first used in England in the 1870's by reformers who wished to make Cambridge and Oxford "not only a place of teaching, but a place of learning" (p. 15). A broader term "scholarship" could be defined by academics who conduct research, publish, and then convey their knowledge to students or apply what they have learned. Webster (1997) defines scholarship as "great and thorough learning." Boyer (1990) may have stated the need for scholarship best in his statement that "the work of a scholar means stepping back

from one's investigation, looking for connections, building bridges between theory and practice, and communicating one's knowledge effectively to students" (p. 16). The basic desire of faculty to make a scholarly connection to their students has created the need for conducting applied research and related scholarly activities in Industrial Technology. In order for the relatively young discipline of Industrial Technology to become an ingrained and elemental part of the higher education community, faculty must take the initiative to enhance their research and scholarship activities.

Establishing and Maintaining a Successful Research Program

The process of starting and maintaining a successful research program should begin early in a junior faculty member's career. The suggestion is to start as soon as a decision is made to accept a job offer in academia. This usually implies that a junior faculty member has to generate ideas for research topics while still trying to complete a master thesis or doctoral dissertation or while still working full time at another job. It is less desirable to try to finish a thesis or dissertation while starting to teach as a junior faculty member.

In developing proposals in the early stage of a teaching career, one should make very careful decisions when choosing the first target research areas. Clear and concise statements of research objectives and deliverables with emphasis on the sponsor's point-of-view should appear in the proposals. If rejected, one should request a critique, revise accordingly, and re-submit. The bottom line is that a new and good idea, proposed to a potential sponsor who has money to spend on an important problem, will often prevail.

The following options are suggested for a junior faculty member to establish a successful research program.

Professional development: Most universities offer their faculty and staff a variety of professional development seminars and/or workshops. A junior faculty member should attempt to

concentrate some time and effort toward a professional development program to establish his/her research agenda. This would include, but not be limited to, computerized searches of internal and external granting opportunities/agencies, grant writing seminars, grant proposal organization, grant budgeting, and university policies, procedures and funding priorities,

Both formal and informal approaches should be taken to gain knowledge and experience at establishing a research agenda. While attendance at professional development seminars and/or workshops provides a more formal scheme for professional development, mentoring with senior faculty members can be very productive and satisfying.

Teaming up with senior faculty members: By collaborating with senior faculty members who work within the same discipline areas, the junior faculty member can develop proposals that have a better chance of being funded.

Additionally, the junior member can gain some realistic knowledge of the tenure and promotion requirements for the university from senior faculty. The junior faculty should first make an effort to introduce himself/herself, as well as his/her expertise, to other faculty members in the department and the college, and then seek an opportunity to team up with them. The junior member should also ask them for their advice, such as providing an example of a successful proposal. The only drawback in working with senior members is the potential for failure by the junior member in developing an independent research identity. However, this can be overcome in later years.

Preparing proposals for government sponsored agencies: One of the major stumbling blocks for junior faculty members is determining the current research interests of potential sponsors, especially at government agencies. It is suggested that the junior faculty attend professional development workshops, national/international conferences, and to talk with other people in academia, business, and

industry. Once a junior member identifies a research initiative, he/she should see how his/her expertise and trained skills could be used to formulate a proposal with good and innovative ideas. If possible, the junior faculty should seek a preliminary document describing the research from potential sponsors. A face-to-face meeting should follow. It's important to talk to the right person, and that usually means the program manager who makes decisions as to what projects should be funded. In the initial contact, the faculty should have his/her research goals in mind. Even if these goals are not what the sponsors want, solid ideas may trigger counter-suggestions. A disadvantage of being a junior faculty member is that he/she has to compete with more established researchers in the same field, including his/her own thesis advisor. For that reason, it is sometimes necessary to start with small programs (\$5K - \$25K) and gradually build credentials.

Working with industry: Industries are profit oriented. It is important to understand their problems and know what they want. The starting point is to establish some contacts. A junior faculty member may approach companies that he/she worked for previously, or those who had made job offers at the end of a graduate program. It is also possible to arrange summer research with industries, similar to government laboratories. The difference is that one has to take the initiative to make all the arrangements with industry. Determining what industries want is probably the major stumbling block for research initiation for junior faculty members. The suggestion is to try to obtain funding from industry later, after getting a little more established.

Work in government laboratories during the summer: This is one of the most effective ways of establishing a research program. Many organizations support this kind of summer research, and applications can be made through the appropriate agency. However, before submitting an application, it is certainly worthwhile for a junior faculty member

to find out more about a particular laboratory. A good source of information for faculty is from senior faculty or colleagues who have worked there before. An organization chart of the laboratory can be very useful in determining background and expertise of laboratory researchers. Personal contact with a researcher can be very informative and beneficial even if limited to phone calls. These initial steps can help eliminate much guesswork. Junior faculty should not make an ambitious plan initially. These summer programs are relatively short and one should choose a problem that can be accomplished in a few weeks. The key is attempting to determine if the short-term research may have a potential for future funding.

While at the laboratory, a faculty should make as many contacts as possible. It is suggested that faculty communicate with individual researchers to determine problems being worked on. By far, the most important thing for junior faculty is to work effectively so as to leave a good impression on the mentor. This will then be a starting point for a good working relationship. As a final suggestion, it is preferable to do this early in the teaching career, normally within the first two years as a tenure-track faculty. This motivates a junior faculty to carefully consider and plan his/her research agenda and enhances the opportunity for a successful tenure/promotion bid.

The Role of the Academic Department

The process of nurturing junior faculty members involves giving them the opportunity for the best possible shot they can generate at getting tenure and promotion. Along this line, there are several things a department must provide to help new faculty members establish their research programs. For example, release time should be made available during the first year. This may mean a reduced teaching load and a minimum of committee assignments. In addition, the department must provide financial support for research

initiation. This can include funds for summer salary, special equipment purchases, and travel to visit potential sponsors and to attend conferences. When possible, the department should provide a student worker and the necessary space for the research. Finally, the department may provide cost sharing on a research contract to help a junior faculty member attract sponsored research. Research is an essential part of the professional development of junior faculty members. Without adequate departmental support, the development of a research program is extremely difficult and in many cases impossible. The availability and willingness of departmental support should be a major consideration in selecting an academic position.

Summary

The intent of this paper is to aid retention and enhance effectiveness of Industrial Technology (IT) faculty in the areas of tenure, promotion, teaching, and scholarship. IT scholarship is needed to advance the core knowledge of the IT discipline, to enhance faculty teaching capabilities, and to satisfy faculty career requirements in higher education. Contemporary IT literature supports the contention that institutions of higher education place an emphasis on faculty scholarship. Faculty can enhance their research agenda by professional development, teaming with senior faculty mentors, preparing proposals for

government-sponsored agencies, working with industry, and/or working in government laboratories during summers. The academic department must support the development of research agendas of junior faculty through specific mentoring, financial support, professional development.

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