

## INTEGRATING TEACHING, RESEARCH AND SERVICE TO DEVELOP SCHOLARLY PUBLICATIONS

Albert Lozano-Nieto  
The Pennsylvania State University  
School of Engineering Technology and Commonwealth Engineering  
P.O. Box PSU  
Lehman, PA 18627  
Phone: (570) 675-9245 FAX: (570) 675-7713  
email: [AXL17@psu.edu](mailto:AXL17@psu.edu)

### Abstract

The publishing of scholarly work is one of the most critical elements at the time of evaluating the performance of a faculty member. Even disciplines and institutions that have not traditionally placed a strong emphasis on faculty publications, are increasingly requiring their faculty to publish scholarly work. This paper explores alternative ways of producing and publishing scholarly work in today's academia, especially for faculty members in non-research institutions of appointments.

### Introduction

We can consider the publishing of scholarly work as a critical requirement for the tenure and promotion of tenure-track faculty members. Even for faculty members in non tenure-track positions, or those for which publications are not required, scholarly publications enhance the possibilities for advance and promotion within their institutions<sup>1</sup>. New faculty members teaching in Engineering Technology (ET) programs as well as those teaching in Engineering programs in non-research institutions face less defined expectations on what is expected from them in the area of scholarly publications compared to faculty members in engineering programs<sup>2</sup>. Moreover, these requirements and expectations for these faculty members greatly vary between different institutions, making it more difficult to address them globally creating confusion to new faculty members as they have a less defined reference frame.

First, ET programs have different mission and goals than engineering programs, as ET programs are more focused on applications rather than basic research. This can be erroneously perceived as having fewer opportunities to develop scholarly publications. Secondly, the teaching load of ET faculty members is normally higher than engineering faculty, leaving them with less time to develop research agenda and publish scholarly work. Finally, because the vast majority of ET programs are offered at undergraduate level, ET faculty does not benefit from the interacting with graduate

students, thus limiting their opportunities for interaction with these young researchers. In these conditions, the new ET educators face the pressure of expectations for scholarly publications from their institutions, at the same time that they have to balance a heavy teaching load, limited infrastructure and resources. This leads to a perception of non-competitiveness at the time of securing external funding to develop work of quality and its publication in recognized journals and other periodicals.

### **Publishing considerations**

A large majority of faculty members teaching in Engineering Technology programs or Engineering programs in non-research universities share a strong teaching dedication, years of teaching experience and more importantly, a very strong interest in undergraduate education as this is the primary mission of their institutions. They are also innovative at the time of developing new teaching approaches for their programs and incorporating technology into the classroom to enhance student's learning. In addition, most of the faculty members in ET program have considerable industrial experience as it is required by ABET. This industrial experience combined with their academic and teaching experience make them unique, as they are familiar with engineering demands such as deadlines, productivity, organizational tasks, etc that all of our students in Engineering Technology and Engineering programs need to learn<sup>3</sup>. The dual vision that this faculty have, from inside academia as well from inside the industrial setting, makes them a valuable asset to their institutions.

However, these faculty members account for only a small percentage of the authorship of scholarly publications in their field. After informally talking with them, we can identify the main reasons that lead them to withdraw themselves from publishing. First, some ET faculty members have only a Master's degree. ABET recognizes the Master's degree as the appropriate terminal degree in engineering technology. Some of them are employed by their institutions through contractual processes, thus not being subjected to the extensive peer-review process that happens to faculty members in tenure-track appointments. Second, the nature of the tenure-track appointment for most of the ET faculty members tends to be mostly bi-partite (teaching and service), with lesser emphasis placed in the research and dissemination of new knowledge. Due to the innate undergraduate education nature of ET programs, even ET faculty with a doctoral degree, who were active in research and publication during their graduate studies feel limited in their ability to conduct research work that may lead to scholarly publication. These limitations are mainly of infrastructural nature, such as the absence of research laboratories, graduate students, etc. Finally there is some perceived feeling of "*wasting one's time*" in involving themselves in the thorough process of creating, developing and submitting scholarly work for publication, that may be linked to previous unsuccessful attempts to publish their work.

The previous comments indicate the perception of ET faculty that they do not need to publish scholarly work to keep their positions, or that they do not have the materials, infrastructure or the training and experience to successfully attend to publish. These perceptions need to be revised if we

are trying to engage more academics into sharing their experience and expertise with the rest of the academic community by means of scholarly publications<sup>4</sup>. In first place, it is necessary to stress to those faculty members who believe they do not need to create scholarly publications that although it may not be necessary to stay on their current positions, they may help them at the time of seeking promotion within their institutions at the same time that they will add to their mobility between institutions. In second place, it is necessary to revisit the concept of publishing scholarly work to make it more integrative of the various disciplines that comprise the engineering and engineering technology careers. We need to dispel the myth that publishing equals to writing basic research papers available only to faculty in research-oriented institutions.

### **What is scholarly work?**

One of the first questions that any new faculty member to an academic institution may ask is the *number* of publications that they need to produce to keep their current faculty status and advance through the promotion and tenure process. Normally, this question remains unanswered by Department Heads and other administrators who are unable or unwilling to provide the *magic number* that will grant tenure to a new faculty member. The immediate next question that a new faculty member normally asks is what is considered to be a scholarly publication. Fortunately, the answer to this question is much clearer. In general we can define that a scholarly publication is that type of publication that the faculty member's institution considers to be such. These considerations greatly vary among different institutions, even among different departments within the same institution. This allows each department or unit to tailor the requirements for what is considered a scholarly publication worth of merit. However, it is also necessary to point out that in some institutions the Promotion and Tenure dossiers are reviewed at the whole University-wide level that may have more general criteria.

In a more traditional approach, scholarly publications have consisted mostly of research published in a peer-reviewed journal. While the peer-review process of the publication contributes to validate any materials submitted for publication, it is not necessary that the content be of basic research nature. In 2000, the Engineering Technology Leadership Institute (ETLI) in its annual meeting discussed the concept of scholarship expectations for their faculty. The Institute identified three areas where ET faculty could develop scholarship that would deal to the publication of scholarly work: Scholarship in Teaching, Scholarship in their Field and the Scholarship on their Professional Practice.

The characteristics of developing scholarly work in each of these areas are expanded below:

- Scholarship of Teaching:
  - o Articles on pedagogy, methodology and innovation on teaching. Based on the faculty member's personal observations and experimentation in the classroom.
  - o Sharing of positive outcomes as well as the negative outcomes. Most of the times

knowing what does not work is more useful to new faculty members than knowing what works.

- Development of laboratory experiments. New faculty members are often assigned to create or modify laboratory experiments in their disciplines. This is an excellent opportunity to help new faculty members at other institutions, at the same time that creates an inter-institutional partnership that can be sustained during their professional careers.
  - Creative assessment of the teaching and learning. As the new ABET criteria becomes more widely used, there will be an increasing need in the sharing of approaches to learning assessment.
- Scholarship in their Field
- Dissemination of knowledge is the key word in this area. Faculty sharing their professional and technical experiences contribute to the knowledge of the ET community as a whole.
  - Articles on applied research submitted and published by the appropriate journals and professional conferences.
  - Reports of student projects supported or funded by industry.
  - Non-proprietary information on technical activities and outcomes carried out by the faculty member. Although the specific technical details of an industry-sponsored project or contract may be covered by proprietary issues, the description of the basic problem and approaches to the solution is normally considered to be of public domain.
  - Grant activity including those to develop new knowledge and learning approaches.
- Scholarship in the Professional Practice
- Sharing with the faculty the working mechanisms of their professional societies and their structure.
  - Describing to the whole community the results of their service in professional societies.
  - Description of short courses for training of other faculty members or K-12 teachers, what can indirectly impact in the recruiting of future students.

### **The approach to publishing**

Once we have identified a topic that we want to share with colleagues, we are faced with identifying a suitable journal for publication, writing the actual manuscript and in some cases, dealing with a rejection from the editor. The following points attempt to give some ideas to newer educators facing the challenge of publishing.

- **Finding a suitable journal for your idea.**

- Even before writing your paper you need to do your homework and find a suitable journal to publish your manuscript. Even the best and greatest manuscripts will fall in deaf ears if there is not a good match between the journal and the manuscript.
  - The good news is that there will be several journals that may be suitable to publish your ideas. How to find them? Go to your library and look at the periodicals that the library holds.
  - A good way to identify a good matching journal is to read the papers that they have published. This will give an idea of the direction that a particular journal is going. See if there are similar papers published there. For example, a journal that only publishes theoretical work may not be the best match for an experimental paper and vice-versa.
  - Once there are several possible journals identified, decide your first choice of journal.
  - Think outside the box. In some cases the best matches are not apparent. Think of who are you writing the paper for and who reads a particular journal. Answer the question: “*Will the readers benefit from reading my work?*”
  - All journals have editors who are responsible for making the final decision on accepting or rejecting a manuscript. But in some cases they are also responsible for the first screening that will decide if the manuscript will go to the peer-review process or will be returned to the author because there is not a match at all between the philosophy of the journal and the manuscript.
  - Pick up the phone and talk to the editors of the journal of your choice. Talk to them about your idea for a paper and ask them if they would be interested in publishing this work. Send them an outline of your proposed paper. Keep in mind that talking to the editor of the journal is only the first step to ensure a good match between paper and journal. Once you submit the paper it will undergo the process of peer-review and will be judged on itself.
  - Do not underestimate lesser known journals or even professional and trade journals to publish your work. The majority of industry reads professional and trade journals instead of academic publications. Publishing in these journals may be an asset at the time of considering consulting for industry.
  - Consult with your institution regarding publishing in professional and trade journals. Will they be accepted as part of your Promotion and Tenure dossier? If so, will they have the same weight as papers published in scientific journals? How does your institution differentiate between them?
  - Consult with the editors of professional and trade journals about their review policies. Some may have peer-review process. Ask the editor for their review policy or to write a statement describing the review process if you feel you will need it at the time of submitting your P&T dossier.
- **Writing your manuscript**
    - Both newer and experienced authors experience *blank-paper* (or *blank-screen*) fear. A good way to beat the fear of writing is using outlines. Create the outline of your manuscript first. Once you have the main message on the screen, work on

- the flow of the message, filling in the gaps.
  - Find out if your journal of choice has a page limit. Exceeding this limit is an easy way of having your manuscript rejected.
  - Similarly, find out if your journal of choice has a page charge.
  - Browse through past issues of the journal to find out if there is a standard length for a paper. Try to stick to this length as much as possible.
  - Follow the *Guidelines for authors* where the journal describes the formatting of submissions. Pay special attention to the details in formatting the bibliographic references.
  - When finished, review your draft for both technical content as well as use of English and grammar. Have the draft read by colleagues from different backgrounds. Note their comments.
  - Although the electronic transmission of documents has enormously facilitated the submission of papers, some journals may still prefer to receive hardcopies. Follow the directions for submission of manuscript and include all the items specified by the journal, such as number of copies, line spacing, etc. Make it easier for the editor and reviewers.
- **When the manuscript is rejected**
  - Let's face it, sometime later or sooner our important and carefully prepared manuscript will be rejected by a journal. Nobody likes to hear bad news, but reacting adequately can help us to do a better job.
  - We need to be aware that acceptance rates are low for most journals, as because of space limitations in their publications need to reject several manuscripts.
  - Carefully study the comments from the reviewers. They will give you an idea of the strongest and weakest points in your manuscript. Read them with an open mind.
  - In some instances the comments from the reviewers makes us think that they did not understand the main point of the manuscript, what we tried to communicate. Even we may feel treated unfairly by the editor, keep in mind that if the reviewers did not understand the main point of the manuscript it is highly probably that the readers would not understand it either.
  - Investigate how the manuscript could be improved by incorporating the comments and feedback from all of those involved in the review process. Do not overestimate however, their feedback and comments. Analyze them critically and determine if there are solid grounds for a change based this analysis.
  - Finally, you will have created a more solid, better manuscript. Submit it for publication to another suitable journal.

## Conclusions

Faculty members in Engineering or Engineering Technology programs need to consider publishing scholarship work as often as possible, while keeping their day-to-day work at the highest possible quality. Although the benefits of such publication may not seem immediate, the record of scholarship will define their professional career, especially at a time where the reality of academic is defined by the publishing of scholarly work. As scholarly work has expanded to include less traditional approaches such as educational and pedagogical activities, applied research, involvement in professional organizations among others, newer educators need to take advantage of this more inclusive view of research and publishing to suit it to our particular academic circumstances.

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ALBERT LOZANO-NIETO is Assistant Professor of Engineering at Penn State, Wilkes-Barre Campus, teaching in the Electrical Engineering Technology program at this location. His research interests are focused on Bioengineering, social implications of technology and developing cooperative learning in Engineering Technology. Albert Lozano currently serves as the Division Chair for the New Engineering Educators Division of ASEE.