

AC 2010-520: KEYS TO PUBLISHING IN PEER REVIEWED JOURNALS

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Keys to Publishing in Peer Reviewed Journals

Abstract

A plethora of literature exists to which new engineering educators can refer that will assist them succeed as scholars. Blocking out time to write every day or every week; learning to say “no”; ignoring bad reviews and heeding critical reviews; reading; writing, writing, writing; exhibiting a willingness to change; being flexible; and being reasonable are included among the suggestions the literature promotes. The intent of this paper in contrast was to provide new engineering educators with a framework for negotiating the journal publication process. In particular, the paper addresses the procedures for producing a manuscript, negotiating the review process, and negotiating the process for producing an article. The paper also identifies the more frequent manuscript shortcomings and reviewer suggestions for improving a manuscript. Evaluating content; design and reporting research; authorship; types of manuscripts; length, headings, and tone; parts of a manuscript; editorial style; manuscript preparation; author responsibilities; online submission; manuscript acceptance and production; and post publication considerations are among the topics addressed. While publishing in the *Engineering Design Graphic Journal* serves as the framework and medium, the practices associated with manuscript preparation, review, and article production and the strategies, techniques, and requirements addressed are applicable to virtually all peer reviewed journals.

Introduction

According to the Timken Science Library’s *Guide to Library Research in Science*¹, the research publication cycle includes the production, dissemination, and assimilation of scientific information in primary, secondary, and tertiary sources—see Figure 1. That is, once new knowledge is produced, it is disseminated through primary sources such as nonformal, preliminary, and formal means. The *Engineering Design Graphics Journal* is an example of a primary source. Then the knowledge is assimilated through secondary sources such as bibliographies, indexes, abstracts, and catalogs. The Educational Resources Information Center (ERIC), an online digital library of education research and information, is a secondary source. Finally, it is surrogated by tertiary sources such as library catalogs and guides to the literature.



Figure 1. The Research Publication Cycle¹.

As well, the *Guide*² notes that scientific journals that publish peer reviewed articles are usually considered the most significant primary sources of information; peer reviewed articles appearing in scientific journals are prepared and conform to a specific structure, dictated by the discipline and the journal; and scientific journals play three major roles in the process of scientific communication—a social role, an archival role, and they serve as a mechanism for the rapid dissemination of information. The guidance provided authors by the discipline and the journal facilitate the scientific journal’s archival and dissemination roles. Thus the ultimate responsibility for the production of a high quality manuscript and one that is worthy of editor and reviewer time rests with the author and their ability to comply with the guidance provided them.

In this paper, we attempted to share with readers, in particular engineering faculty within the first several years of their initial teaching appointment, suggestions for negotiating the journal publication process. At the very least, complying with the guidance facilitates the storage and retrieval of new knowledge. In this paper, the *Engineering Design Graphics Journal’s* manuscript preparation process, review process, and article production process was used for illustrative purposes. The strategies, techniques, and requirements addressed are, however, applicable to virtually all peer review journals.

Publishing in the *Engineering Design Graphics Journal*

The *Engineering Design Graphics Journal (EDGJ)* is the official publication of the Engineering Design Graphics Division of ASEE³. It is published three times each year: fall, winter and spring.

The intent of the Journal is to provide a professional publication for educators and industry personnel associated with activities in engineering, technology, descriptive geometry, CAD, and any research related to visualization and design. It is devoted to the advancement of engineering design graphics, computer graphics, and subjects related to engineering design graphics in an effort to:

- Encourage research, development, and refinement of theory and applications of engineering design graphics for understanding and practice.
- Encourage teachers of engineering design graphics to experiment with and test appropriate teaching techniques and topics to further improve the quality and modernization of instruction and courses.
- Stimulate the preparation for articles and papers on topics of interest to the membership.

Manuscripts submitted for publication are subject to blind peer review by the *EDGJ* editorial review board. It is up to the author to ensure the manuscript is consistent and within the boundaries of the journal’s scope and that the identity of the author(s) of the manuscript be concealed from reviewers during the review process.

Manuscript Preparation

Preparation of manuscripts intended to be published in the *EDGJ* is guided by the latest edition of the *Publication Manual of the American Psychological Association*⁴. Even though the

following list may not necessarily be inclusive or applicable to all manuscripts that are submitted to all journals, authors ought be mindful of the following: evaluating content; design and reporting research; authorship; types of manuscripts; length, headings, and tone; parts of a manuscript; editorial style; manuscript preparation; author responsibilities; online submission; manuscript acceptance and production; and post publication considerations. And like most publication manuals, the *APA Publication Manual* standardizes the publication process. “Standardization has greatly facilitated the communication of new ideas and research and simplified the tasks of publishers, editors, authors, and readers as well as enable linkages of electronic files across articles and across publishers”⁴.

Evaluating content

Prior to preparing a manuscript for submission, authors should determine whether the research makes a significant contribution to the field. Among the questions that should be asked are the following: is the research question significant, and is the work original and important; have the instruments been demonstrated to have satisfactory reliability and validity; are the outcome measures clearly related to the variables with which the investigation is concerned; does the research design fully and unambiguously test the hypothesis; are the participants representative of the population to which generalization are made; did the researcher observe ethical standards in the treatment of participants; and is the research at an advanced enough state to make the publication of results meaningful.

Design and reporting research

When preparing their manuscript, authors should familiarize themselves with the criteria and standards used by the journal to evaluate manuscripts for publication. According to the *Publication Manual*⁴, the following are among the shortcomings in the design and reporting of research: piecemeal publication, reporting of only a single correlation, reporting negative results without attention to the power analysis, lack of congruence between a study’s specific operations and the author’s interpretation and discussion of the study’s outcomes, failure to report effect sizes, failure to build in needed controls, and exhaustion of a problem.

Authorship

Being listed as lead author on peer reviewed publications is often an important factor in the promotion and tenure of faculty. As early in the course of manuscript preparation as possible, the following should be established: who is to be listed as an author, in what order the authors are listed, and who will receive alternative forms of recognition. Author bylines are intended for those who make primary contributions and are responsible for the published work.

Types of manuscripts

Journals, like the *EDGJ*, that make use of the *Publication Manual* are primary publications and normally publish the following: results of empirical studies, review articles, theoretical articles, methodological articles, and case studies. Duplicate publication, the publication of manuscripts that have been published elsewhere, is discouraged as it creates the illusion that there is more

information available than exists. Some journals expressly forbid the submission of manuscripts that have been published previously or are currently under review elsewhere. Exceptions however, do exist. It is the author's responsibility to ascertain the rules and exceptions for a given journal.

Length, headings, and tone

Once it has been determined that a particular manuscript is appropriate for a targeted journal, authors need to consider the potential manuscript length, headings, and while writing, the tone used. Manuscript length is guided by the journal itself either explicitly and implicitly. One rule of thumb for ascertaining article length is to divide all double spaced manuscript pages by four⁴. This will provide a reasonable number of journal pages needed to publish a given manuscript. Headings help readers grasp the nature of the article and the relative importance and nature of elements of the article. Use of appropriate headings also makes the manuscript easier to read and review. Tone refers to writing expression and disruptive or disturbing writing in contrast to writing that is done in a professional manner. Orderly presentation of ideas, smoothness of expression, economy of expression, and precision and clarity all contribute to writing that is compelling and interesting. In contrast, avoid being abusive and writing that focuses on the insignificant.

Parts of a manuscript

Manuscripts of empirical studies normally consist of a title page, an abstract, an introduction to the problem, a methods section, a results section, and a discussion section. Title pages normally consist of the manuscript title, author name(s), and author affiliation. Manuscript titles and author information, along with the abstract, are key to the indexing and thus the retrieval of articles. Therefore titles should summarize the main idea of the manuscript and not contain words that add no value to the main ideas of the manuscript. Author names should include a full first name, middle initial and last name and should be consistent for the professional life of the author(s). Confusion and the inability to find other work produced by a given author is often a result of failing to maintain consistency. The abstract is a comprehensive summary of the manuscript. More often than not, the abstract is what other researchers read to determine the relevance of the article to work they're doing. The abstract is also used by indexers to index articles so others can retrieve the article later. The methods, results, and discussion are the main text of the article.

Editorial style

To ensure resulting articles are clear and consistent from article to article, issue to issue, and volume to volume, authors are asked to abide by a particular editorial style. Matters of the consistent use of punctuation and abbreviations, construction of tables, selection of headings, citation of references, table and figure titles, and quotations to name a few, typically fall under the guidance of editorial style. Even within the field of engineering, journals, and even conference proceedings, vary quite widely in editorial style.

Manuscript preparation

Minimally, the following must be considered when preparing a manuscript for publication in the a journal such as the *EDGJ*: typeface and size, line-spacing, margins, order of manuscript pages, page number and page headers, corrections, paragraphs and indentations, use of uppercase and lowercase letters, headings, spacing and punctuation, seriation, quotations, and statistical and mathematical symbology. Instructions are also available for the preparation of: the title page; abstract; text; references; appendices; footnotes and notes; tables and table titles, notes, and rules; figures and figure captions; spell checking; and the cover letter.

Author responsibilities

Prior to manuscript submission, authors need to thoroughly proofread their manuscript and make all changes and corrections. Correct spelling and punctuation, accurate quotations, complete and accurate references, relevant content, coherent organization, proper format, legible appearance and the like reflect upon the author's due diligence and help shape the attitude of reviewers and editors. Authors are responsible for concealing their identities if the manuscript is to be blind reviewed. If a checklist is available, use it. Ensure a complete cover letter, including contact information, accompanies the manuscript.

Online submission

Virtually all publishers request electronic manuscripts prepared with the aid of a computer, including the preparation of all figures and tables. Many journals are also making a move to email submissions or even entirely online operations with every step from submission, to review, to publication done with the aid of a website. It is important that authors follow all a journal's guidelines, especially those regarding formatting. This helps to ensure the submission of a document with text, figures, and tables that are readable. Following a journal's guidelines also helps facilitate the blind review process.

Manuscript acceptance and production

Upon acceptance of a manuscript for publication, the editor may request of the author(s) some or all of the following: copyright transfer, certification of authorship, disclosure of interests, and letters of permission from copyright holders. You may also be required to complete minor revisions to the text, figures, or tables before publication. Sometimes in order to meet publication deadlines, these changes must be done in a timely fashion so maintaining contact with the editorial staff and being flexible with your schedule may be necessary.

Post publication considerations

Once the manuscript has been published, there is an expectation authors respond to inquiries from readers regarding their research. To this end, authors should be able to provide research data, instructions, coding systems, details of procedures, analysis procedures, and the like. Thus, it behooves authors to retain such materials. As well, from time to time errors are discovered. Authors should submit correction notices to the editor immediately upon discovery of errors. The

notice should include a complete citation for the article, the exact location of the error, the error as it appears, and the verbatim correction.

Discussion of the *Engineering Design Graphics Journal's* Review Process

Seldom has the “perfect” paper been submitted to the *EDGJ*, one that is accepted as-is and has no need for revisions. Many papers are publishable with minimal changes and it is the job of the reviewers and editorial staff to provide appropriate and timely feedback to authors on what they need to do to make a submission publishable. With the adoption of online submission, review, and publication by many journals, the timeline may have sped up but many aspects of the process remain constant.

Before submitting a paper, there are several things every author should do:

- Make sure that the manuscript actually meets the scope of the journal.
- Read the manuscript submission guidelines and follow them, many journals, including the *EDGJ* post this information on line.
- Check that the files are in the format requested, for example if it is .doc, or .rtf for text, or .jpg or .gif at a specific resolution for graphics.
- Ensure that that paper can be blind reviewed by removing the authors’ names and university affiliations from both the text and the document properties.
- Include the author’s name and full contact information in email correspondence and online submission.

After an article has been submitted, authors are typically made aware of a timeline for review of their submission, either by an email response or based on timelines posted on the journal’s website. In the case of the *EDGJ* and other journals, unless otherwise specified, if an author receives no acknowledgment of receipt of the submission, it is best to follow up with an email or phone call. Especially with the increasing use of technology in the submission and review process, it must be remembered that sometimes attachments get lost and email gets incorrectly placed into spam folders or otherwise goes awry on the information superhighway. That said, once a submission is acknowledged, it is not necessary, nor is it professional, to contact the editorial staff multiple times to check on the status of the submission. If the estimated deadline has passed, then it is acceptable to make another contact.

Different journals have their own methods of providing feedback to authors, from handwritten comments on paper copies, to comments inserted in Word documents, to filling out online forms. The members of the review board of the *EDGJ* are conscientious in their work and strive to give complete and detailed reviews based on a form that has specific criteria to assess in the submitted document including; significance of topic, quality of ideas, methodology and design, grammar/spelling and so on. Some of the most frequent comments from reviewers that require edits by the authors, or result in rejecting the article as it is currently written include:

- The topic does not fit the scope of the journal or the interests of the readers.
- The research results do not add anything new or are not applicable to the engineering education community.

- The author has not included references to some of the major resources and significant prior research done on the topic.
- The sample size is not large enough to support claims of statistical significance.
- The article is not scholarly in that it does not have any hypotheses or conclusions, or only proposes research with no results.
- Conclusions as stated are not supported by the given data.
- References, data, software, hardware, and other techniques do not reflect current technology or are otherwise out of date.
- References are not in the appropriate format; the *EDGJ* requires APA format.
- Poor quality graphics, confusing charts, and mislabeled figures.
- Multiple grammatical and spelling errors, along with poor clarity of expression.

At one time or another, and usually countless times over the span of a career, authors have their submissions rejected for publication. No one enjoys this, but one of the most important things to keep in mind is not to take it personally. Yes, it is your professional work that was rejected, but step back for a while, put the reviews and rejection notice aside, and revisit it later. Then reread the reviews, try to look at the work and reviews objectively, and see how improvements could be made. Consult previous editions of the journal to become more familiar with the types of articles that are usually published and see if your submission can be reworked based on the feedback given. If you do not agree with the reviews, and especially if the reason for rejection was that it did not fit the scope of the journal, consider submitting your article to a different journal that may be a better match.

The previous comments on how to deal with a rejected article are nothing new and are standard advice. However, what is often not mentioned in advice to authors is what not to do. The following list is based on actual inappropriate reactions from authors whose work was rejected:

- Do not immediately send an email, make a phone call, or leave a voice mail expressing your frustration or disagreement with the reviewers' comments, take some time to consider your response and if you still feel the need to communicate with the editors, do so in a constructive manner.
- Do not request the names of the reviewers so you can contact them personally, this violates the integrity of the blind review process, and do not look up the names of all members of the review board and email any or all of them individually.
- If you happen to meet a member of the editorial staff or review board at a conference, do not approach them in a confrontational manner.
- Although it may be a tempting way to express your frustration, do not make disparaging comments about the journal, the editorial staff, or reviewers to friends and colleagues, it truly is a very small world and word gets around.

On the positive side, if you do not receive an outright rejection, but the suggestion to revise and resubmit, do carefully consider the feedback, make the changes and resubmit the article. It should not be merely considered a polite form of rejection, reviewers and editors do not suggest an article be resubmitted if they do not believe it has definite potential for publication in the future. Occasionally there may be conflicting feedback from reviewers but these conflicts are

usually stylistic and most comments tend to be consistent on major points. For the conflicting feedback, use your best professional judgment on how to incorporate the feedback.

Once an article has been accepted, there is still more work to be done. Not all journals have the same rules or methods of editing work. Nevertheless some common mistakes and incorrect assumptions made by authors, both new and experienced, who have submitted to the *EDGJ* include:

- Expecting the journal staff and/or reviewers to correct grammar and typographical errors in an initial submission, mistakes will be noted by the reviewers but it is up to the author to correct them before submitting the final document for publication.
- Requesting that the journal staff edit the graphics files or recreate tables and forms in preparation for publication.
- Not keeping to deadlines or replying to requests for additional information in a timely manner.

Conclusion

As the Timken Science Library² notes, peer reviewed journals play a significant role in the dissemination of new knowledge due to the collective nature of science. And while it may slow dissemination, the peer review process ensures the research is based on sound science, that the work is worthy of publication and archiving, and that the work can be relied upon to serve as a springboard from which to continue building a knowledge base. Therefore, authors should embrace the guidance provided by journal gatekeepers—the editors and reviewers, manuscript guides, and publication manuals.

It is also important to read scholarly articles from a variety of sources, seek input from colleagues and mentors, and heed reviewer feedback. The seemingly trivial can be frustrating at times, especially when font size, punctuation, and the consistent use of the third person are cited in reviews. It is all part of the publishing process. The publication of well written substantive research in a variety of scholarly publications is important to the establishment and advancement of academic careers.

Bibliography

1. Timken Science Library. (2008, August 26a). Evolution of Scientific Information, Lesson 2: Scientific Communication. In *Guide to Library Research in Science*. Retrieved December 21, 2009 from <http://www3.wooster.edu/library/sciref/Tutor/EvSciInfo/evsciinfo.php>
2. Timken Science Library. (2008, August 26b). Importance of Scientific Journals, Lesson 2: Scientific Communication. In *Guide to Library Research in Science*. Retrieved December 21, 2009 from <http://www3.wooster.edu/library/sciref/Tutor/libraryresearchscience/importscijournal.php>
3. Engineering Design Graphics Journal. (2009). *Engineering Design Graphics Journal*. Retrieved December 21 2009 from <http://edgd.asee.org/journal/index.htm>
4. American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, DC: Author.