

Scientific Writing and Publishing : a Way of Communicating Knowledge

Dr S.A.V.Moorthy



Writing is the most important means of communicating scientific work. It is used to document and communicate ideas, research findings and new developments to others. There are Various forms of scientific writing such as research papers, articles, reviews, book chapters, research notes *et-al.*, can be seen. Articles and research papers have to be published in academic journals or magazines for the purpose of recording and to get value for such information. Doing research is only part of the cycle, and the cycle will be completed when the findings of research are published. Researches doing so, gain recognition, appreciation and acknowledgement as experts in their expert fields at national and international levels. It also gives recognition to not only to an individual but also to the department and institution, and in some cases where the topic is globally important, the country of the author may also gain recognition.

It must recalled that Derek Solla de Price (1967) one of the outstanding and prolific writers on Philosophy,

history of science and science policy in the mid 20th centry in one of his classical papers titled “Nation can publish or Perish” which later become a popular slogan.

Scientific writing and publishing

A scientific paper is “a written and published report describing original research results”, according to Robert Day¹. According to him, a scientific paper must be a valid publication, and it must be published in the right place. A Research article is a written form of an original study published in an academic journal. As such, it is a primary source of information. A scientific paper should be simple, clear, impartial, accurate, and structured logically. The way of writing and the language used, and the targeted readers are also to be considered when writing a scientific paper. Generally Technical jargon and lengthy words/sentences have to be avoided.

Scientific research articles provide a method for scientists to communicate with other scientists about the results of their research findings. Generally a standard

format which includes title, authors name and affiliation, introduction, materials and methods, results, discussion, acknowledgement, and references, is used in writing scientific articles, in which the results are presented in an orderly and logical manner. More attention is given to publications by academic institutions in recent years.

Publishing research results/findings has an impact on the development and growth of science. If results and ideas are kept secret science will not progress. Publishing will result in contribution to knowledge creation, and in addition, receive constructive criticism, which may help other researchers to do further research in that area, and for policy makers to develop evidence based policies. As well as to take decisions while appreciating and valuing the evidence generated. This in turn will contribute to the socio-economic development of the country and improve the well-being of the people.

What is the necessity to publish?

Publishing research findings is crucial for a career of an academic. This can result in enhancing credibility of a scientist/researcher, and will help to established

new scientific collaborations or consultancy, while keeping the authors updated with the latest research. Further, publications also yield indirect rewards. For example, it will help to improve a researcher's job prospects, as well as the ability to be promoted. Considering the following benefits in publishing scientific articles, scientists/ researchers are encouraged to write and publish their results.

Reasons for publishing

- To let others know that something has been discovered
- To disseminate results in the most prestigious and productive way
- To exchange ideas

- To add to the body of knowledge
- To get academic recognition and career enhancement
- To build a stronger personal brand
- To get refined in communicating and writing skills
- To learn from constructive feedback provided by reviewers
- To establish valuable collaborations
- To develop or improve on existing policy
- To gain personal satisfaction and confidence
- To show funding agencies that work has been done



Fig.01 : Journal of the National Science Foundation (JNSF)

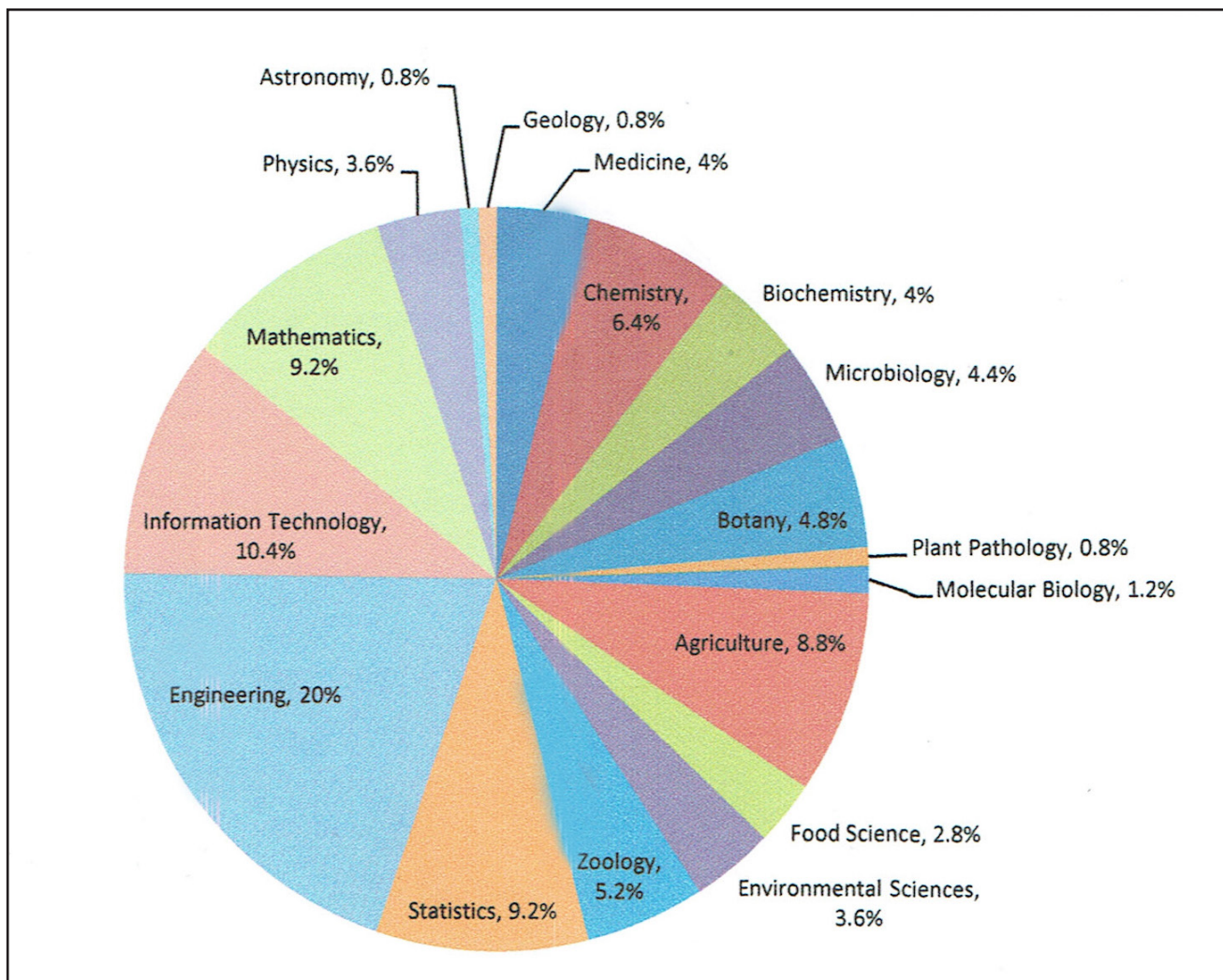


Fig.02 : Submissions of articles to the JNSF by different disciplines

Role of a scientific journal

Researchers publish and disseminate their work in different ways: publications in books, journals, conference proceedings etc. Publishing in different formats differ across disciplines. Academic journals first appeared in the middle of the 17th century. Their importance as a means of disseminating knowledge has grown considerably since then. Journals have to play an important role in disseminating accurate information to the community. It is imperative for a scientific journal to get international recognition by publishing high-quality articles. Editors and Reviewers play major roles in these tasks.

In academic publishing, a scientific journal is a periodical publication intended to further the progress of science, usually by reporting new research finding. Scientific journals serve as permanent and transparent forums for presentation, scrutiny, and discussion of scientific investigations. Publications in these journals are usually peer-reviewed. There are thousands of scientific journals. Some are peer-reviewed while some other journals are indexed and peer-reviewed. Some journals are not peer-reviewed.

Peer-reviewed and Indexed journals

Peer-review is the review of articles by one or more experts of similar



Fig.03 : Sri Lanka Journal of Social Sciences (SLJSS)

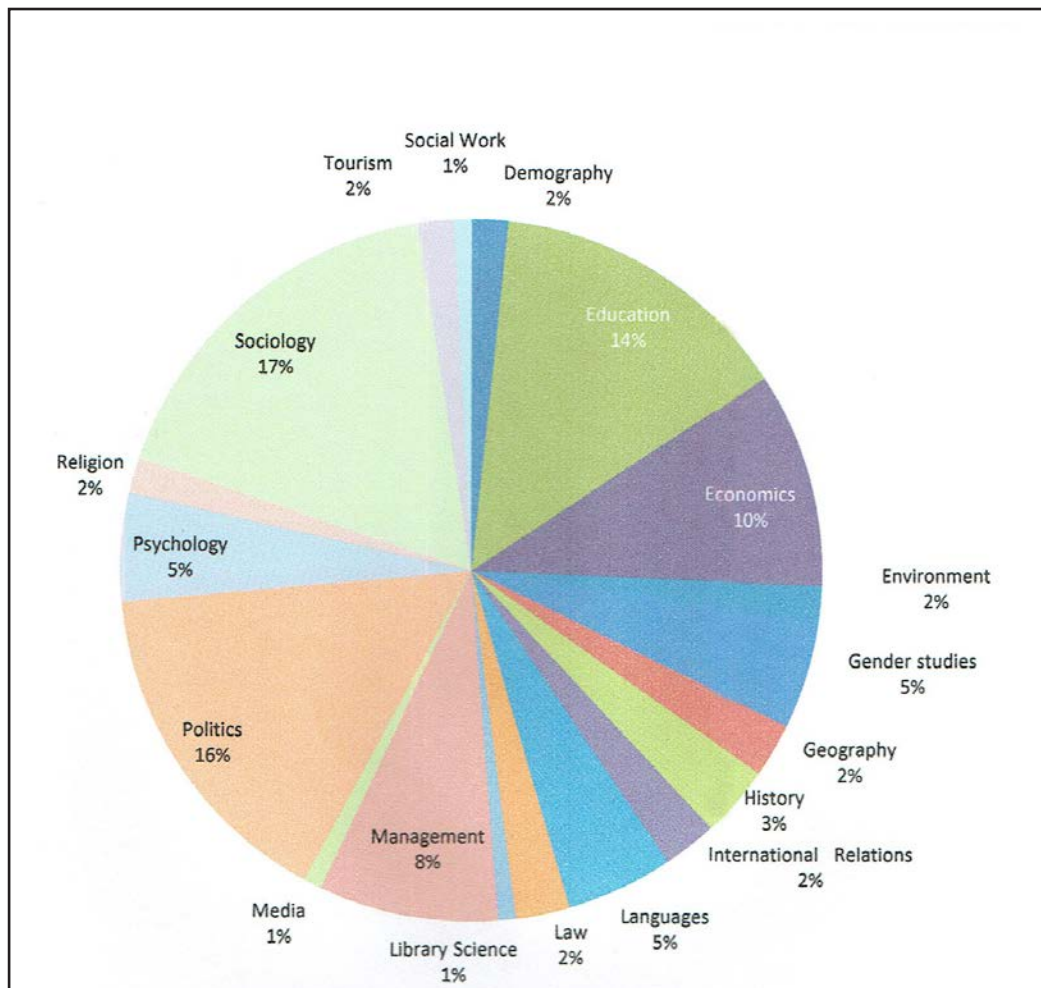


Fig.04 : Submission of article to the SLISS by different disciplines

competence to the authors (peers) before it is published in the journal to ensure the quality, scientific validity, accuracy and suitability for publication.

A common rating system for journals is “indexing”. An indexed journal is a journal included in leading databases such as Science Citation Index, SCOPUS, PubMed Hinari, Ulrich’s International Periodical Directory, Index Copernicus, Pro Quest etc. The most commonly used index worldwide is science citation indexed (SCI) or social science citation index (SSCI) or engineering index (EI). Indexation of a journal reflects its quality. Indexed journals

are considered to be of higher scientific quality as compared to non-indexed journals. Indexing of journals increase their visibility, availability, and readership.

Impact Factor and Citation

Impact Factor (IF) of a scientific journal is a measure reflecting the yearly average number of citations to articles published in that journal. Impact Factor is commonly used to evaluate the relative importance of a journal within its field. IFs' are calculated yearly for journals listed in the Journal Citation Reports which is an annual publication by Clarivate Analytics (previously owned by Thomson Reuters). IF is not available for all indexed journals. Journals with higher impact factors are often deemed to be more important than those with lower ones.

Citation is a quotation from or reference to a paper, book or author. Citations will help to assess current trends, gaps and emerging fields of research. A citation index is an academic credit report which indicates how a researcher scores in the citation index in that particular field.

Open access

Open access means "availability to all". Recent developments in technology has enabled access, search, and share of published information increasingly with greater ease and speed. The technology has also made submission and review process and time for the publication easier. In open access, research outputs/publications are freely available online to all at no cost. All forms

of published materials such as peer-reviewed and non peer-reviewed journal articles, conference papers book chapters and monographs can be made open access.

Journals of the National Science Foundation

The National Science Foundation publishes two journals, the Journal of the National Science Foundation of Sri Lanka (JNSF) and the Sri Lanka Journal of Social Sciences (SLJSS), with the aim of promoting and assisting the publication of research results. Both are open access and peer-reviewed journals.

The JNSF has been publishing the results of research on all aspects of Science and Technology since 1973. It accepts research papers of both local and foreign researchers. The submissions to JNSF cover a wide range of disciplines in Science and Technology, predominantly with Engineering, Information Technology and Mathematics(Fig.01).Four issues of the journal are published per year in March, June, September and December. It is indexed in Clarivate Analytics and various other databases such as Chemical and Biological Abstracts, BIOSIS Previews, Zoological Records, SCOPUS, TEEAL, Ulrich's, AGRICOLA and EBSCOhost.

The Journal has a wide circulation both locally and overseas. Authors from over 25 countries have published their articles in JNSF. After getting indexed and being open access and peer-reviewed, the JNSF has observed an exponential growth in submissions. JNSF Impact Factor for 2016 is 0.42, which has increased significantly

when compared to the previous year.

The Sri Lanka Journal of Social Sciences (SLJSS) is published twice a year in June and December. The journal publishes articles in Sinhala, Tamil and English languages covering the entire range of disciplines in Social Sciences, focusing on Sri Lanka and other South Asian countries since 1978. The journal covers a wide array of disciplines in Social Sciences and humanities predominantly in Sociology, Politics, Education and Economics. The journal is currently indexed in SCOPUS, and is in the process of getting indexed under Clarivate Analytics.

Finally, scientific writing and publishing serve as an essential tool to communicate scientific results and ideas among the scientific community that will contribute to the expansion of scientific knowledge, while giving personal satisfaction to the author.



Dr S.A.V.Moorthy

Head
Journal Unit
National Science Foundation
gowry@nsf.gov.lk
0775099339