

once lectured to a group of fisheries administrators and development workers on the mechanics of technical writing, as part of their course on Technical Writing in Fisheries.

Starting A Research Project

We began discussions using some suggestions for information steps to take before designing a research project. These include:

- *Conducting a literature search* through one or more appropriate computer databases which may be made free of charge through one agency or

another. You may receive a list of abstracts or simply references relating to scientific articles published over a certain period of time, e.g., the online version of Biological Abstracts, BIOSIS, which extends back to 1969.

Computer databases, however, cover most of the literature of developed countries but often are highly deficient in developing-country literature.

This search should be supplemented by source-to-source searching, e.g., checking references in the latest articles and working backwards.

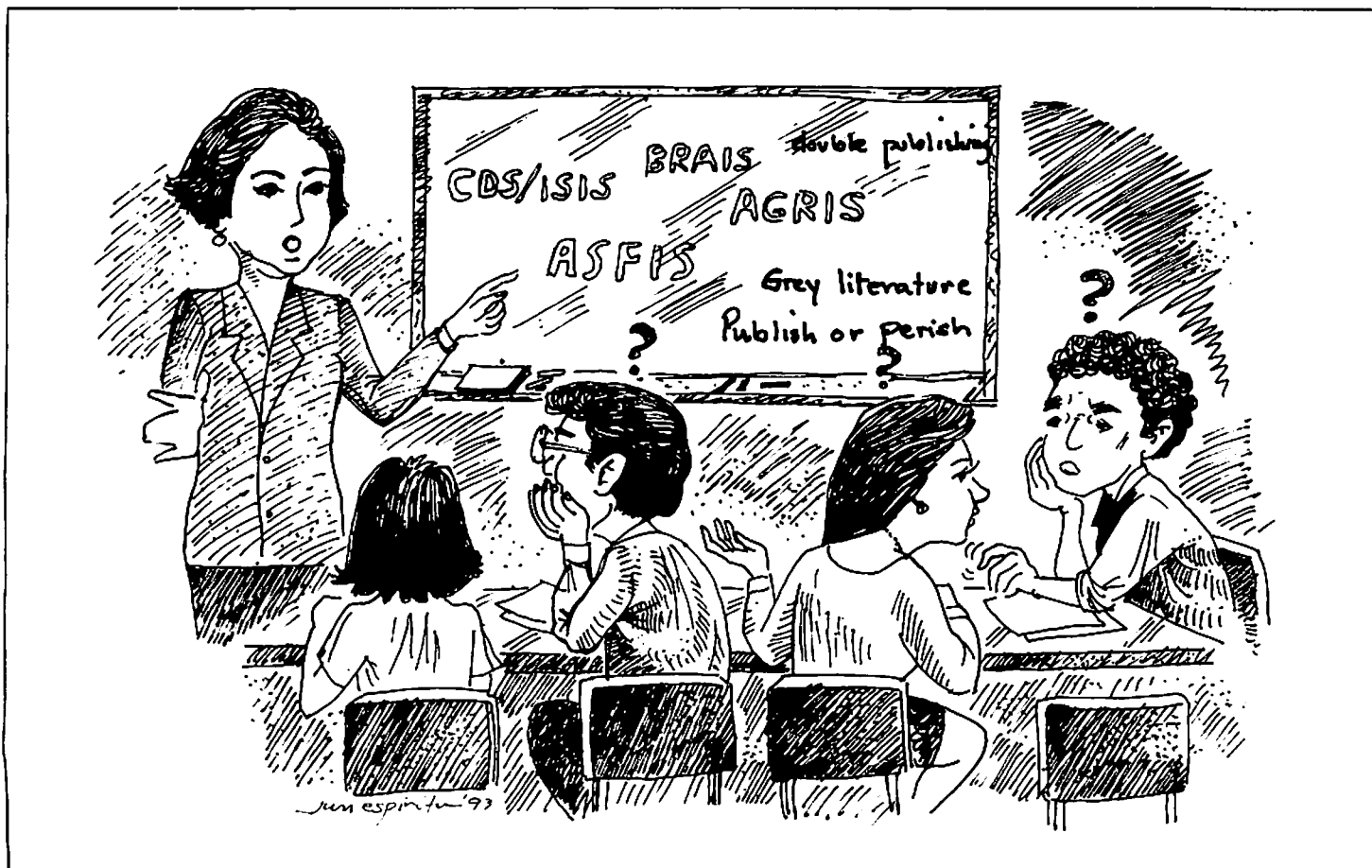
If one has a good research grant, it would pay to work forward in time in the literature search by delving into the

online databases SCISEARCH or SOCIAL SCISEARCH. The databases cover only major journals, are very expensive and require hard currency for payment. The cost, however, may well be worth the results.

- *Finding out who your colleagues are.* It is helpful to make a list of authors and institutions responsible for the previous research in your chosen field.
- *Making contact with leading authors.* After your supervisor, the major authors in your field are most likely to know the present status of the field. Write and ask them if your proposed research is appropriate and perhaps ask for suggestions on the design of the project, even where to buy equipment, as well as ask for reprints of their papers, which will provide most of the background information that authors are too busy to tell you about.
- *Expanding one's knowledge of the field.* Research at the periphery may turn out to be of more interest because it is more related to your situation or perhaps because the next breakthrough could happen out there - or maybe it already has, unknown

Technical Writing Tips

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to all but the producers and readers of grey literature that does not reach the computer databases and may not have been reported at all.

Consult the references to the articles discovered in the computer literature search as well as good old-fashioned bibliographies and hard copy versions of abstracting journals, e.g., Biological Abstracts and Chemical Abstracts. Current awareness services tell who is doing what and where.

- *Checking with libraries for their special subject information service.* They may have shelves full of grey literature.

Another approach is the referral service, e.g., INFOTERRA, which is well known for its huge number of experts in its database, some of whom are from developed countries, are well travelled and have information about relevant research activities in some developing countries.

Fisheries Information Services

Of the participants to the training course, only one had actual exposure to computer literature searching. She is a research assistant with an ICLARM collaborative project and uses the computerized collection of the ICLARM Library. Computer literature searching seemed to be alien to the rest of the participants who started to ask questions about where they could avail of the service, how much it costs, how this could be worked out through their institutions, what current awareness service is, and what local institutions offered such service. I briefly introduced them to ICLARM's computerized collection and online DIALOG service, as well as the databases of ASFIS, BRAIS, and AGRIS. *Naga* focused three of its issues on such fisheries information databases (April 1982, April 1984, April 1986).

I also explained the value of the *Naga*'s Information Department to research because of its latest references (articles, books, journals) and meetings, and that similar information services are available from other fisheries institutions and newsletters.

Publishing Research

Among the participants, I found out that not one has published research. They

did prepare final reports but only as internal government documents and also reports for the consumption of donors. I was asked what grey material was and I said that these were unpublished material or documents produced in low numbers and that their government documents were an example.

A number of trainees have collected data but did not know how to manage them. One even mentioned he had voluminous data on squid and cuttlefish but did not know how to analyze them.

This situation reminds me of D. Pauly's article, "Fisheries scientists must write" (*Naga* April 1986, p. 8-9), which states that "...the main reason why one should write up one's work is because it is not completed—even doesn't exist as far as one's colleagues are concerned—before it is written up and *published* (i.e., available to colleagues working outside your institution)."

Naga Editor J.L. Maclean suggests a way of rating oneself as a user and producer of information (*Naga* April 1986, p. 10-12). In his questionnaire, the lowest score means one has not published a paper and is not going the right way about using information or preparing to publish or is not interested in keeping abreast of the field.

In my analysis of use of Philippine biological journals (Fish. Res. J. Phil. 26(1-2): 61-74), I found out that articles by national biologists made some impact both locally and internationally, which should inspire national fisheries scientists to publish their research results.

The lecture, which delved into the criteria, characteristics and elements of the different parts of a research report, did not easily sink in. I suspected this could be due to the following: (1) my lecture (and/or I) was uninteresting; (2) it was an unholy hour (after a heavy lunch) and a siesta seemed necessary; (3) there was a brownout; only a fan, an overhead projector, and a microphone were working.

However, after the coffee break, things turned out to be lively; each one wanted to be heard. We "dissected" an article and rated each section of the paper from the title to the references based on the presence or absence of our criteria for a research report. After this, I heard a very encouraging "Ahh, so, that is how it is done!"

Other Issues Relating to Writing

One issue in the course concerned graphs, illustrations, and tables which make a research report interesting and esthetically pleasing but which I advised the participants to use judiciously. Although they are necessary, I explained that what could be described in words need not be repeated as a table or graph to pad a research report or to impress. We also agreed on when to use a graph or a table depending on what data should be presented.

Other issues related to footnotes, references, acknowledgements, copyright, authorship, plagiarism, double publishing. Related to this, D. Pauly gives tips on using other people's data (see *Naga* January 1988, p. 6-7).

Implications

The meeting showed the lack of awareness of a cross-section of fisheries managers/scientists of current information services and techniques. It also showed the latent enthusiasm amongst the same people to improve their knowledge and to publish their "grey" data.

Some Useful References

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