

# International Statistical Education Newsletter

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Professor R.M. Loynes, Editor  
Editorial address: ISEN,  
Department of Statistics  
University of Sheffield  
Sheffield S3 7RH, UK

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## EDITORIAL

This issue sees the publication of a further article under the Viewpoint heading - in fact the first of two parts of an article discussing statistical training in developing countries; the achievement of something approaching self-sufficiency is clearly the long-term aim, but how to achieve this requires considerable debate followed by the mobilisation of such assistance as is available.

From the next issue onwards there will be a new section in this newsletter, in which vacancies for statistical teaching positions can be advertised; the scheme will be on an experimental basis and its future will depend on the demand and on difficulties which may arise. The words 'statistical' and 'teaching' are to be interpreted in a broad sense; advertisements will be carried provided they are for an institution or organisation in the third world, and provided they are open to non-nationals of the country concerned, and will be free of charge. The format will be as brief as possible, giving just enough information so that a reader will know whether he wishes to find out more; institution, subject (and level if this is not obvious), job-level (e.g. full professor), starting time and length of contract, contract type (e.g. expatriate/local pay scales), language, and an address for further enquiry are probably sufficient. Any institution wishing to use this service should contact the editor; the deadline for the next issue is 1 September. The editor reserves the right to edit or refuse advertisements.

## EDUCATION COMMITTEE

### TASK FORCE ON THE TEACHING OF STATISTICS AT SCHOOL LEVEL (TOTSAS)

TOTSAS is pleased to announce that its international review of statistical education at school level will be published (by the ISI with financial assistance from UNESCO) at the end of June 1982. This report is entitled

TEACHING STATISTICS IN SCHOOLS THROUGHOUT THE WORLD and is edited by Professor Vic Barnett. It describes and comments on the present situation in a large number of countries, divided into groups representing Europe, North America, Australasia, Africa, South America and the Far East. There is a Foreword by Dr. J. Gani (Chairman, ISI Education Committee) and Preface by the Editor. The book has 250 pages and is

available in soft cover form, price US\$10 or UK£6 (including surface mail) from the ISI Permanent Office, 428 Prinses Beatrixlaan, P.O.Box 950, 2270 AZ, Voorburg, The Netherlands.

### TASK FORCE ON TERTIARY & TECHNICAL EDUCATION IN STATISTICS

The Task Force is engaged in a task for which it would welcome information from others. It is compiling a directory of short courses (up to 9 months), on statistical matters; these will naturally be of interest only if they are offered on a reasonably regular basis, and if they are not restricted merely to a closed group of participants. Systematic enquiries are being made, but further information would be welcome, and should be sent to Professor Robert Loynes at the address at the head of this Newsletter.

## REPORTS FROM ROUND THE WORLD

### STATISTICAL EDUCATION COMMITTEE IN THE U.K.

The UK statistical societies have for many years had a joint Education Committee which represents their interests at all levels of statistical education from the primary school classroom up to postgraduate university study. Sponsored by the Royal Statistical Society and the Institute of Statisticians, the Joint Committee advises the Councils of the two parent bodies on responses on national issues as well as promoting specific action. In the latter respect the Committee was a major force behind the establishment of the journal 'Teaching Statistics' and continues to maintain an interest in that journal (which is jointly sponsored by the Royal Statistical Society, Institute of Statisticians, Applied Probability Trust and International Statistical Institute).

The Committee has considered several matters of national or professional concern over the last year or so.

Prompted by concern over the level of numeracy of school-leavers, the U.K. government set up a Committee of Inquiry into the Teaching of Mathematics in Schools; it has recently published its recommendations under the title *Mathematics Counts* (HMSO, 1982). The Joint Committee made detailed proposals to this Committee of Inquiry and it is encouraging to note that most of the points stressed are taken up in the report, including recommendations on teaching through an empirical approach involving real data from diverse practical sources; an early introduction to basic ideas through everyday situations; and an 'across the curriculum' emphasis with a staff member acting as a coordinator.

The Committee has also submitted statements on Postgraduate Education to a Working Party of the Advisory Board for the Research Councils (these are bodies which sponsor university research); on implications for Statistics in the national criteria proposed for new school-level examinations at the 16+ level and on the place of Statistics in common core syllabuses in mathematics at the upper level of the secondary schools.

The Committee has had direct contact and discussion with a number of national bodies, representation at relevant international committees

(e.g. ICME IV in Berkeley, California) and is maintaining an interest in the planning of the first international conference on teaching statistics (to be held in Sheffield in August, 1982).

Any inquiries or communications on the work of the Committee should be addressed to Professor Vic Barnett, Chairman, RSS/IOS Education Committee, Department of Probability & Statistics, University of Sheffield, Sheffield S3 7RH, U.K.

## VIEWPOINT

### STATISTICAL TRAINING IN DEVELOPING COUNTRIES

#### 1. The Training of Users of Statistics

This is the first of a two part article on statistical training in developing countries. Three kinds of distinct, but possibly overlapping, training programs are needed in developing countries, the emphases to be placed on them depending on available resources and states of development. Here we discuss (i) statistical training to improve the work on governmental statistics and (ii) statistical training for students in colleges and universities in support of their undergraduate or graduate curricula in other disciplines. In the second part of this article, we shall discuss the training of statisticians.

Each of us has limited perspectives and biases based on our own experiences and interests in statistics. My qualifications to address the topic, statistical training in developing countries, arise from a year as a Ford Foundation Program Specialist assigned to the Institute of Statistical Studies and Research of the University of Cairo, continued consultation with the Institute in following years, membership on the ISI Education Committee, limited exposure to statistical training centers in other countries, and consideration of future needs and goals in statistics for the American Statistical Association. It is thus that I have a viewpoint on the topic chosen. Whether or not my viewpoint is accepted by others is less important than the stimulation that I hope that it will provide for thought on the issues raised.

The typical situation in developing countries as I see it is as follows. There exists a small number of well trained statisticians who received their training abroad. They return to their home countries, attempt to meet a diverse and large range of statistical training and consulting needs, are deluged with the teaching of elementary statistics courses, and either regress to a lower level of competency or leave their countries. Low salaries and the possibility and need of several salaries concurrently exacerbate the situation. Longer range planning to meet the statistical needs of a developing country is needed, perhaps at the expense of initial neglect of important short-term statistical problems. The first priority for the use of available qualified statisticians should be the well-supported staffing of needed training programs in statistics, programs developed centrally on a national basis or, when appropriate or necessary, on a regional basis. Only in this way can the needed statistical personnel be developed to address the applied problems of statistics and only in this way can the needed training programs receive the full attention of well qualified instructors.

Training programs for government workers in statistics should emphasize good data collection, summarization, and analysis. Good descriptive statistics should be taught as well as basic concepts of survey sampling. Effective computer use and management of data sets will become more and more important in developing countries in the future. These training programs are designed for support personnel in government statistical agencies and they do exist. The ISI Task Force on Coordination of Statistical Training Centers developed an Almanac listing seventeen such centers with extensive information about them; it may be obtained from the ISI permanent office. While that Task Force has

completed its tasks and has been dissolved, the Task Force on Tertiary and Technical Education can assist with curricular recommendations and review, possible exchanges of personnel, and general coordination. If additional similar training centers are needed, planning assistance should be sought from the latter Task Force. Training centers of this kind may be developed as separate entities or in association with programs for the training of statisticians.

Statistical training programs for students in various undergraduate and graduate degree programs in areas of application of statistics are necessary. Such programs are also the ones that generate excessive teaching loads and dissipate the energy of the available well qualified teachers of statistics when they are in very short supply. When attempts are made to meet this training need, the available statisticians tend to be dispersed through a number of faculties within universities. There is then no coherent statistical group sufficiently large or competent to develop training programs for statisticians.

Most of the effort in training students from other disciplines is teaching at an elementary level - first courses in business and economic statistics, courses in statistical methods, and introductions to probability and mathematical statistics. At first stage, it may be necessary to have subject matter specialists teach required elementary courses in statistics. They can be assisted through a national effort to provide refresher courses for them and appropriate teaching material - recommendations on textbooks, possible translations of texts, and supplementary collections of examples and problems of local interest. A second stage may involve the teaching of such courses by statisticians with Master degrees as they are generated from training programs for statisticians. At the same time, on-campus statistical consulting in support of university research programs may be initiated. A final stage of development would be reached when training programs for statisticians produce sufficient doctoral graduates to meet the on-going needs of the country.

While limitations on trained personnel may place limits on the teaching and use of statistics in developing countries, it seems particularly important that what is done is done well. Governmental statistical series should be based on carefully collected data and sound statistical methodology. Undergraduate degree programs, and then graduate programs, should be modelled on the best in the world and have supporting statistical components where needed. Available well-trained statisticians should be used effectively and the training of statisticians should be the focus of their activities, the subject of the second part of this article.

Ralph A. Bradley

(R.O. Lawton Professors of Statistics, Florida State University, Tallahassee)