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Foreword

Statistics is a complex discipline, partly concerned with the analysis of quantitative data, and partly with the mathematical theory of random events. The quantitative data may arise from censuses or economic surveys; the mathematical theory may relate to gambling or insurance risk. That it is a discipline of vital importance to modern life is reflected in its gradual inclusion in the school syllabuses of many countries all over the world. The international Statistical Institute (ISI) has long recognized the importance of statistical training, not only at the advanced level for professional specialists, but also at the school level for informed citizens. In creating the Taskforce on Teaching Statistics at School Level (TOTSAS), the ISI Committee on Statistical Education has made it clear that it encourages the inclusion of basic statistical concepts in school education.

Before so far-reaching an aim can be achieved, however, it is essential to survey the present state of affairs: where is statistics currently taught in schools, what are existing syllabuses like, and how do they relate to national needs? Can one draw any conclusions from the information available, and could different countries or regions learn from each others' successes and failures? These are some of the questions which the present Report addresses.

Professor Barnett has gathered together accounts of current practice in the teaching of statistics in schools in several European countries, the USA and Canada, Australia and New Zealand, some widely differing African nations, Argentina and Malaysia. The difficulties of such an enterprise have been tremendous, but the results are very worthwhile. I should like to regard the Report as the start of what may well become a continuing series of regional studies. Perhaps the next volume could outline statistical teaching in schools in Algeria, Egypt, India, Japan, Mexico and the USSR among other countries.

It should be pointed out that the Report does not aim to provide guidance on the optimal integration of statistics into the school curriculum. Rather, it emphasizes how things are in fact done at the moment, and tries to relate current practice to national needs and traditions. Thoughtful readers will be able to draw their own conclusions; teachers throughout the world should gain much, both in terms of statistical methods and of general insight into the role of statistics, from reading this Report.

It only remains for me to congratulate Professor Barnett and his colleagues for their pioneering efforts; the ISI is very much in their debt. It is my hope that the Report will evoke careful thought on the place of statistics in schools

from a broad audience of laymen, educators, politicians and last but not least professional statisticians.

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Preface

It is clear that there is very wide variation from one country to another in the teaching of statistics at school level. Differences exist in the extent to which the subject is taught; from countries where there is virtually *no* exposure to statistics to others where *most* schools teach at least some material in descriptive statistics or elementary probabilistic or statistical principles and methods. There are fundamental distinctions from one country to another in the very nature of the subject which are inevitably reflected in any statistics (or 'stochastics') taught in schools. Large contrasts are found in the age ranges for which statistical material is offered; it may cover most ages from about 8 years to 18 years, or be restricted to specific narrow age ranges at the upper end. Probability and statistics may be part of the syllabus for publicly administered school-leaving examinations or appear only informally as limited amounts of non-examinable material. The treatment may be mathematical in style or oriented towards practical applications; statistics might be restricted to the mathematics classes or it might appear in a range of other subjects, including, for example, biology or geography. Statistics may have featured for many years in the school curriculum or it may only now be starting to be considered as an appropriate school subject.

Whilst it has long been apparent that there are wide differences in attitude, content and approach, it would seem that no co-ordinated effort has previously been made to review, and publish details of, the exact nature of statistical education in different countries in order for reasoned comparisons to be drawn. This report makes a modest first attempt to fill this gap, by presenting descriptions of the situations in a number of different countries. For each country (or group of countries) considered, an individual with first-hand experience of the prevailing circumstances has presented a personal description of the present situation, of the way in which it has developed and of possible future prospects. Since the *general* structure of school education varies so much from country to country it has been necessary to outline some of the broad features in each case, including such matters as the types of schools, and the pupils they cater for, principles of administration of the educational system, methods of teacher training, patterns for examinations, prospects for curriculum reform, and so on. Only when such background is explained can details of the specific provisions for teaching statistics be explained and understood.

It is important to stress that this report makes no attempt to evaluate or make judgments on what happens in different countries, or to recommend any particular pattern for statistical education in schools. Its sole aim is to describe the present situation to enable the reader to see how

different countries approach the problem. In recent years there has been a rapidly growing interest in school-level statistical education and it is hoped that this report may make a useful contribution to our understanding and knowledge on this important matter.

By no means all countries have been reviewed, but those considered represent a wide range of different patterns for statistical education. Even to obtain commentaries on the 15–20 countries included in the report has been a task of some magnitude: in finding appropriate contacts, encouraging them to prepare their material and in assembling them in a single report. This was made possible by the efforts of the International Statistical Institute (ISI) in reviewing its policy on statistical education at its 41st Session in New Delhi in 1977. A substantial restructuring led to the establishment of four *taskforces*, charged with taking active roles in different aspects of statistical education. One such taskforce, the *taskforce on teaching statistics at school level* (TOTSAS), was set up in the form of a broadly representative group of individuals who would monitor, study and comment on the teaching of statistics in schools throughout the world. The present members of TOTSAS are:

Prof. V. Barnett (Chairman)	University of Sheffield, U.K.
Prof. Dr. H. Dinges	Johann Wolfgang Goethe Universität, Frankfurt/Main, West Germany.
Prof. J.B. Douglas	University of New South Wales, Kensington, Australia.
Prof. P.L. Hennequin	Université de Clermont, Aubière, France.
Prof. R.V. Hogg	University of Iowa, U.S.A.
Prof. G. Kallianpur	University of North Carolina at Chapel Hill, U.S.A.
Dr. H. Midzuno	Prime Minister's Office, Tokyo, Japan.
Prof. B.I. Penkov	Bulgarian Academy of Sciences, National Committee for Mathematics, Sofia, Bulgaria.
Prof. A.E. Sarhan	Arab Republic of Egypt Embassy, London, U.K.
Prof. S. Tulya-Muhika	Makerere University, Kampala, Uganda.

TOTSAS undertook, as one of its initial activities, the study of the present situation and this Report is the outcome of this initiative. It will be clear that much of the material presented has been contributed by TOTSAS members, other contributions have been made by individuals contacted by members of TOTSAS. As the Chairman of TOTSAS, I was asked by the ISI to act as Editor for the Report. I am pleased to express my sincere thanks to the TOTSAS members, and to the other contributors, for all their hard work in preparing their contributions and for their forbearance and cooperation in meeting editorial requirements for the preparation of the Report. I am also grateful to the Joint Matriculation Board and the East African Exams Council for permission to quote from their published materials. Whilst personal views must influence discussion material, every effort has been made by contributors to report fairly and accurately on factual matters on the situation in the

different countries. In turn, as Editor, I have striven to present accurately the material prepared by the contributors.

Sheffield, April 1981. VIC BARNETT