

THE INTERNATIONAL STATISTICAL EDUCATION CENTRE (ISEC) IN INDIA: TRAINING GOVERNMENT OFFICERS FROM DEVELOPING COUNTRIES IN STATISTICAL THEORY AND APPLICATIONS

Amita Pal and Md. Zafar Anis
Indian Statistical Institute, Kolkata, India
pamita@isical.ac.in

The International Statistical Education Centre was founded in 1950 in Kolkata, India under the auspices of the International Statistical Institute and the Indian Statistical Institute. Its objective was to provide statistical training at various levels to government officers from developing countries in Asia and Africa, which were facing shortages of adequately trained statisticians. A regular course on Statistical Theory and Applications, suitably designed for this purpose, has been conducted since 1950. Its curriculum is judiciously formulated to meet its objective, and teaching is conducted by the faculty of the Indian Statistical Institute and senior officials of the Indian Statistical Service. Positive feedback from participants indicates that this course has contributed to skill enhancement in statistical data analysis and has a favourable impact on career advancement.

INTRODUCTION

In October 1950, the International Statistical Education Centre (ISEC) was set up in Kolkata, India under the joint initiative of the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the International Statistical Institute (ISI), and the Indian Statistical Institute. This was possible due to the proactive support of the eminent statistician, Professor Prasanta Chandra Mahalanobis (PCM) who was then the Director of the Indian Statistical Institute. (Incidentally, the name of the latter is also abbreviated as ISI but will henceforth be denoted by IndSI to avoid confusion with the acronym for the international institute.) The mandate of ISEC was to provide intermediate and advanced education in statistical theory and methods as well as specialized instruction in applications of statistics to particular fields for participants from the Near-East, South-East Asia, and the Far-East. A regular course on *Statistical Theory and Applications* was designed with this objective in mind and has been and continues to be conducted since 1950. Its curriculum is appropriately framed for this purpose and is taught by the faculty of IndSI and senior officials of the Indian Statistical Service. The value of the course is evident from its continuing popularity even after seven decades since its inception and from the positive outcomes reported by participants.

HISTORY

It is interesting to note that this Centre has its genesis in deliberations on statistics education that took place soon after World War II (see, for example, Goudswaard, 1964; ISEC, 2011; Rice, 1949; Vere-Jones, 1995).

In 1948, Dr. Stuart A. Rice, then President of the ISI, submitted a memorandum to the United Nations Statistical Commission (UNSC) on behalf of the Institute titled *An International Programme for Education in Statistics*. After subsequent discussions in the Statistical Commission, whose members recognized that there was a shortage of adequately educated and trained statisticians in many countries, the United Nations Economic and Social Council (ECOSOC) adopted a resolution at its ninth session held in 1948. This resolution recommended that the UN Secretary General, in collaboration UNESCO, other interested specialized agencies, the International Statistical Institute, and other appropriate international organizations, arrange for

- a survey of the needs for education and training in statistics and the formulation of an international programme to meet these needs and
- a report on the means by which such a programme may be put into effect.

These were to be reported/submitted to the fourth session of the UNSC prior to further recommendations by the former to the ECOSOC on this matter.

Also in 1948, the ISI set up its *Committee on Statistical Education* to administer its educational programme. The first meeting of the Committee was held during the Berne session of the ISI in 1949. It discussed a report, in large part written by Rice (1949), titled *Furtherance of Statistical*

Education. This was the basic report for the development of the educational activities of the ISI, in which the character of the proposed programme was outlined in detail.

In this report, a plan was proposed for an international statistical education centre in India, specifically, at Calcutta (now Kolkata), to be sponsored by ISI in collaboration with the Indian Statistical Institute (IndSI). Calcutta was selected because PCM, a member of the UNSC as well as the Director of IndSI at that time, offered the cooperation of the IndSI, with its excellent facilities and broad experience in statistical research as well as in techniques of data collection, particularly sampling. Such a centre would be designed to provide intermediate and advanced education in statistical theory and methods and specialized instruction in applications of statistics to particular fields. The general purpose would be to give further instruction to selected students trained in the Institute's short courses that were to be given in different countries and to students from these and other countries in the region who had already acquired a basic education in statistical principles. The objective was to equip them either

- to participate effectively in organizing and conducting statistical education and training in their own countries, or
- to serve in administrative or technical statistical posts in government agencies or other institutions engaged in activities requiring advanced or specialized statistical training.

It was contemplated that the centre would provide instruction for three types of students:

- actual or prospective teachers of statistics,
- persons already engaged in statistical work in governmental or non-governmental agencies or persons proposed to be so employed after completing their training, and
- students of promise who may deserve to receive encouragement and support in prosecuting more advanced studies.

The report gave detailed justification for the recommendation related to the location of the centre in India and, specifically, in Calcutta. It also dwelt at length on logistic issues related to the centre such as staff, facilities, and budget.

Incidentally, the outcome of the survey on education needs as recommended by the ECOSOC was undertaken by ISI and was published in 1957 by UNESCO in the form of a report edited by Mahalanobis (1957), available in the P. C. Mahalanobis Collection at the Institutional Repository of the IndSI Library (<http://library.isical.ac.in:8080/xmlui/handle/10263/5>).

ISEC: AN OVERVIEW

In October 1950, ISEC was set up in Calcutta as per the recommendations in the report, with the support of UNESCO, the ISI, and the IndSI. Its objective was to provide intermediate and advanced education in statistical theory and methods and specialized instruction in applications of statistics to particular fields for participants from the Near-East, South-East Asia, and the Far-East. Initially the centre was operated jointly by the ISI and the IndSI, with the general administration being vested in a joint Board of Directors (BoD) comprised of representatives from the ISI and the IndSI. The BoD was later expanded to include representatives of the Government of India. Mahalanobis was the chairman of the BoD from 1950 until his death in 1972. His successor was the legendary statistician, C. R. Rao, who held this position until 2015. He was succeeded by another renowned statistician, S. P. Mukherjee, who continues in this position. On behalf of the BoD, its Member-Secretary, who is appointed by the Director of IndSI, shoulders the responsibilities of conducting the day-to-day administration, foremost of which is running its teaching and training programmes.

The centre continues to operate with the financial support of the Indian government as well as IndSI, even though the association with ISI was terminated in 2006–07. In practice, the emphasis has been on education at the intermediate level for persons engaged in statistical work in government agencies. Initially, two, six-month courses were organized per year. In 1954 (from the 8th term), the duration was increased to an academic year of nine months with a frequency of one course per year. Since 1966 (the 20th term), the length of the course was fixed at ten months. Very recently, in 2020, the Board of Directors of ISEC approved the extension of the duration of the course to twelve months at the suggestion of IndSI. Due to the COVID-19 pandemic, the course could not be offered during 2020 and 2021, so this decision could not be implemented. It is expected that the course will be resumed from 2022, and it is hoped that the duration can be extended to one year henceforth.

The current status of ISEC is that of an *associate institution* of IndSI, as stipulated by Regulation number 14 of the Institute (page 10 of the document that can be accessed via <https://tinyurl.com/5cd78v2j>). By virtue of this status, it gets complete infrastructural, administrative, and logistic support from IndSI. Its administrative staff as well as the Member-Secretary of its BoD are employees of IndSI. All the facilities existing in the Institute are made available to ISEC, including classrooms, well-equipped data processing centres, and a modern library with a vast collection of books and journals. Participants are fully sponsored under various schemes of the Ministry of External Affairs of the Government of India or by agencies from their own countries.

APPROACH

The ISEC Regular Course on *Statistical Methods and Applications* is uniquely designed to cater to the needs of government officers working in national statistical offices. It recognizes that the practising statistical officers might not have had a thorough training in statistical methodologies, though they may have learned some of the essentials on the job. It also takes into consideration the fact that mid-level officers, during the course of their career progression, might have lost touch with the finer details of the relevant statistical methodologies or could not keep up with recent advances, having completed their formal college education long ago.

Keeping these factors in mind, this unique ten-month course, which is conducted in the English language, has been designed to consist of four phases as described below.

Phase I

Phase I is three months in duration. It begins with a revision of relevant topics at the A-Level, gently introduces probability and descriptive statistics, and goes up to estimation. Homework/assignments help to gauge participants' progress. Formal examinations are also held.

Phase II

Phase II is conducted over one month. During this period, the participants are exposed to the statistical systems at the national level in India. Officers of the Government of India deliver lectures and explain the intricacies of the systems. During this time, participants interact with practising statisticians from various government offices. In the recent past, they have benefitted from interaction with representatives from the following offices:

- *The Directorate General of Commercial Intelligence and Statistics (DGCI&S)*, which functions under the Ministry of Commerce, Government of India; it is the pioneer official organization for collection, compilation, and dissemination of India's Trade Statistics and Commercial Information.
- *National Sample Survey Office (NSSO)*, which functions under the Ministry of Statistics & Programme Implementation (MoSPI), Government of India, and is responsible for the conduct of large-scale sample surveys in diverse fields on an all-India basis.
- *Data Processing Division (DPD)*, NSSO, which is responsible for sample selection, software development, processing, validation, and tabulation of the data collected through surveys.
- *Survey Design and Research Division (SDRD)*, NSSO, which is responsible for technical planning of surveys, formulation of concepts and definitions, sampling design, designing of inquiry schedules, drawing up of tabulation plan, analysis, and presentation of survey results.
- *National Statistical Systems Training Academy (NSSTA)* under the training division of the MoSPI, is a premier Institute fostering human resource development in official statistics. The trainees visit this office in Noida (near Delhi) for about two weeks. During this Delhi visit, the participants are also taken for local sight-seeing in Delhi, which has many tourist attractions that showcase the cultural diversity of India. In addition, a visit to the Taj Mahal in Agra is also arranged. Thus, the Delhi visit serves a dual purpose of fostering academic advancement and appreciation of Indian culture.
- *Bureau of Applied Economics & Statistics (BAE&S)*, *West Bengal*, which is entrusted with the responsibility of collection, collation, analysis, and dissemination of credible and timely statistics at various levels; it covers all sectors of the Economy of the state of West Bengal for the purpose of planning, decision making, and comparative analysis of statistics pertaining to different states.

Phase III

Phase III is two months in duration. It consolidates the theoretical insights gained in Phase I and draws on the practical exposure received in Phase II. Statistical inference and econometric methods are explored, as are demographic principles. An assessment is done after this phase.

Study Tour

In the recent past, the survey schedules and Questionnaires of the NSS surveys have been demonstrated to participants in the context of an actual survey. For example, the NSSO 77th Round Socio-economic Survey, the Time Use Survey, and the Annual Survey of Industries were chosen for this purpose for participants of the 2019–20 term. Data collection by questionnaire was illustrated as a part of the NSSO survey on education and health in the 2018–19 term, and there was a live demonstration of a crop-cutting experiment conducted by NSSO in 2017–18. As a part of the study tour, the participants are also encouraged to visit centres of cultural and historic importance in the vicinity to gain an exposure to the diversity and richness of Indian culture.

Phase IV

Phase IV is conducted over about two and a half months and is devoted to working on a project. This helps the participants to consolidate their learning by putting into practice the theoretical knowledge gathered during earlier phases of the course.

Recent Revision of the Curriculum

The curriculum for the course is regularly updated, in keeping with current demands and requirements. In this spirit, a major exercise had been undertaken recently. This revision is significant and incorporates valuable input from international experts. The salient features of the revised curriculum include the following:

1. An initial two-week *foundation course* addressing pre-requisites such as English and mathematics
2. Emphasis on use of R and on practical/tutorial sessions
3. Focus on methodology and applications rather than on theoretical development
4. Use of online tools and resources by instructors to supplement classroom lectures
5. An increase in the number of specialization topics to seven (from four)

OUTCOMES

Feedback collected from participants at the end of each term of the course indicates that participation in the course has generally helped participants in their career progression and in data-driven activities at their workplaces, involving collection, analysis, inference, and forecasting. Participants have reported various benefits. Some have been motivated to pursue higher studies. Others feel that they have become better teachers. Some feel that their training at ISEC has made them more competent to take on additional responsibilities at work and/or to discharge day-to-day assignments more confidently. Some feedback from participants of recent terms of the course, conducted in the last few years, can be found in <https://www.isical.ac.in/~isecweb/feedback.pdf>. To summarize the feedback received in recent years (ISEC, 2021), participation in the course provided participants with skills on how to use statistical tools for problem-solving at work, served as an eye opener, helped them to get promoted, strengthened their capacities in statistical processing and analysis, sharpened their skills in data analysis with R and MS Excel, and helped them to learn more about the depths of statistics in their field of work and how to get the desired outputs.

CONCLUSION

More than seven decades after it was established, ISEC continues to be committed to its mission to provide *intermediate and advanced education in statistical theory and methods* as well as *specialized instruction in applications of statistics (in specific fields)* to participants (mainly government officers) from developing countries.

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