THE TEACHING OF STATISTICS IN THE PHILIPPINES: MOVING TO A BRIGHTER FUTURE

Lisa Grace S. Bersales
School of Statistics, University of the Philippines, Philippines
lisa_grace.bersales@up.edu.ph

If one needs to identify the birth of the teaching of statistics in the Philippines, one would recognize the year 1953 as the best choice. The Board of Directors of the professional association of statisticians in the country founded the Statistical Training Center to provide trainings for government statisticians. A year later, the association turned over the center to the state university, the University of the Philippines. It, thus, became a degree-granting center offering the first academic program in statistics in the Philippines. The paper provides the history of teaching statistics in the country from the early years, in the 1950s, to the current. It discusses the different challenges faced during various phases and the solutions done by various stakeholders. The paper ends with an optimistic view of the future.

BACKGROUND

If one needs to identify the birth of the teaching of statistics in the Philippines, one would recognize the year 1953 as the best choice. The Board of Directors of the Philippine Statistical Association, the only professional association of statisticians in the country, founded the Statistical Training Center to provide trainings for government statisticians. A year later, the association turned over the center to the state university, the University of the Philippines. It, thus, became a degree-granting training center offering the first academic program in statistics in the Philippines. After fifty years, the center, now a college (the School of Statistics), offers a baccalaureate program, two masteral programs and a Ph.D. program. Bersales (2006) reported that by 2006, nineteen colleges and universities nationwide already provide statistics degree programs in the tertiary level. Statistics has slowly gained recognition as a discipline in itself and basic statistics is being offered as a course in many academic programs. Many disciplines recognize the contribution of statistics in enhancing their research and analytical skills. Thus, statistics has gained recognition outside its mother discipline- mathematics.

There are still challenges for statistics, though. David and Maligalig (2006), Tabunda (2006) and, Reston and Bersales (2008) identified the challenges as: lack of qualified teachers, lack of locally produced educational materials, availability of other teaching aids such as computers and software. locally The challenges are present at various levels–primary secondary, tertiary- and focus of some reforms are in the tertiary level.

OBJECTIVE

The paper provides the history of teaching statistics in the Philippines from the early years to the present. The future is not bleak. Technology has been a catalyst in the progress of the teaching of statistics. Teachers have been utilizing computers and statistical softwares enhancing their teaching. Students' interest and capacity for learning are maximized with the use of actual data being processed through computers. Support systems have been put in place–continuing support of the Philippine Statistical Association in training teachers teaching statistics; the Philippine Statistical System involving academe in its generation and analysis of official statistics and providing professorial chairs; research and education agencies like the Commission on Higher Education and the Department of Science and Technology that provide scholarships, research and training support; other disciplines that involve statisticians in team approach to research.

THE BIRTH OF STATISTICS EDUCATION IN THE PHILIPPINES AND THE EARLY YEARS (1953-1969)

The seed of higher level of education in Statistics in the Philippines was planted in 1952 when the first board of directors of the Philippine Statistical Association discussed the possibility of establishing an international statistical center in Manila under the dual sponsorship of the Philippine government and the United Nations. This recommendation was a result of their

In C. Reading (Ed.), *Data and context in statistics education: Towards an evidence-based society. Proceedings of the Eighth International Conference on Teaching Statistics (ICOTS8, July, 2010), Ljubljana, Slovenia*. Voorburg, The Netherlands: International Statistical Institute. www.stat.auckland.ac.nz/~iase/publications.php

observation that staff doing statistical work then did not have formal training in statistics. At that time, college education offered only three units of elementary statistics and there were no undergraduate and graduate programs in statistics in the Philippines (Lorenzo, 1953).

In 1953, the Statistical Training Center was established under a bilateral agreement between the Philippine government and the United Nations. Its first academic program, Master of Arts in Statistics, was instituted in 1954. It was formally turned over to the University of the Philippines in 1963 (Bersales, 2006).

The years that followed the creation of the Statistical Training Center were referred to as the golden years (Concepcion, 2004) since faculty for the center were recruited and sent to American universities to earn their MS degrees and/or PhD degrees. Furthermore, the United Nations provided resource persons serving as visiting professors spent time in the center mentoring both faculty and students. Students consisted mainly of government staff trained to do statistical work in their respective offices. They eventually assumed strategic positions in government and contributed to the country's government statistical products and services. The Statistical Training Center was eventually renamed The Statistical Center and with the offering of the academic programs, statistical agencies from other Asian countries such as Indonesia sent their staff to study in the Center (Parel, 2004). Bersales (2006) records that by the late 1960s the following academic programs were offered by the Center:

Year Instituted	Academic Program
1954	M.A. in Statistics
1957	M.S. Statistics replacing M.A. in Statistics
1964	B. of Statistics
1967	B.S. Statistics replacing B. of Statistics
1968	Master of Statistics
1969	Ph.D. Statistics

Advocacy for the proper use of statistics and the training of statisticians in the Center was continued by the Philippine Statistical Association. In 1968, another advocate for statistics was founded- the Philippine Social Science Council. The Council is an organization of social science organizations, research and training institutions including the academe. The Philippine Statistical Association and the Statistical Training Center became members of this Council. This move brought statistics to other disciplines in the social sciences and economics.

THE NEXT THIRTY YEARS (1970-1999)

In 1998, The Statistical Center was renamed The School of Statistics. This provided more recognition in the university of statistics as a discipline separate from mathematics.
Furthermore, more academic programs were instituted in other universities in the Philippine. Bersales(2006) lists them as:

Year Instituted	Academic Program
1970	M.S. Experimental Statistics in the University of the Philippines Los Baños(UPLB)
1972	B.S. Statistics in UPLB
1977	M.S. Statistics in UPLB
1979	Master in Applied Statistics in Polytechnic University of the Philippines (PUP)
1980	B.S. Statistics in Mindanao State University –Iligan Institute of Technology (MSU-IIT)
1985	Ph.D. Statistics in UPLB
1995	Master of Applied Statistics of MSU-IIT

These academic programs were developed to meet the emerging needs of the country during the said decades. These were: need for statistical capacity of researchers of agriculture productivity, continuing demand for statisticians in statistical agencies of government, need of academic institutions for statistics teachers and researchers. The latter is the least addressed need since most graduates from the statistics programs do not become teachers. Thus, teachers of statistics subjects of non-statistics majors in college are usually mathematics majors without proper

training in the teaching of statistics. Tabumda (2006) and Reston and Bersales (2008) already reported on this problem.

During this period, the importance of computer software and hardware in the practice of statistics gained recognition. Consequently, the teaching of statistics was modified and enhanced with technology. The enhancement did not come fast since access to facilities was available only to a few. Furthermore, not all teachers were trained in the use of software and hardware. In fact, this problem is still existent up to the present.

In 1987, the Philippine Statistical System was created. It is a decentralized system of statistics agencies of government that produce statistical services and products for the country. Agencies in the Philippine Statistical System have become strong supporters and advocates of the academe in its teaching of statistics. They provide scholarships for students and faculty, grants for research and research dissemination, funds for development of teaching materials and books, data for research and use in teaching applications of statistics.

Also during this period, the Department of Education and the Commission on Higher Education were created. The former is government ministry for elementary and secondary education while the latter is a commission to oversee higher education. They replaced the former government ministry for all levels of education. Statistics was considered as part of mathematics and, thus, no policies and programs were specifically provided for statistics.

Demand for data analysts in industry started peaking at this time. Those who know statistics as an important tool in data collection and analysis started seeking for statistics graduates to fill up such positions. Thus, enrolment in graduate programs started increasing. Government statistical agencies began feeling the competition for statistics graduates from the private sector.

THE TECHNOLOGY YEARS (2000 TO THE PRESENT)

The Philippines clearly was in the age of technology when Y2K was ushered in. By the 2004, new statistics programs were instituted. Among them, as reported by Bersales (2006),were:

Year Instituted	Academic Program
2000	new Master in Applied Statistics in PUP
2001	B.S. Statistics in University of the Philippines Visayas
2004	M.S. Statistics in MSU-IIT

By 2006, nineteen academic institutions were already offering statistics programs from B.S. to Ph.D. Graduates get employment not only in statistics agencies, but actually most go to the private sector- market research and polling institutions, financial institutions an banks, the academe and research institutions, international agencies such as the Asian development Bank.

The Commission on Higher Education started recognizing statistics as a discipline separate from mathematics by awarding the School of Statistics and the Institute of Statistics as Center of Excellence in Statistics and Center of Development of Statistics, resp. Furthermore, it created a Technical Panel of Statistics composed of the heads of the School of Statistics and the Institute of Statistics and a representative of the Philippine Statistical Association.

The Philippine Statistical Association and the Philippine Statistical System has increasingly provided support for academe in the teaching of statistics. Reston and Bersales (2008) highlighted the advocacy efforts such as the review of locally written textbooks, the grants for writing reference books, trainings for teachers teaching basic statistics in college, holding of for a to present research in statistics.

PROBLEMS IN THE TEACHING OF STATISTICS IN THE PHILIPPINES

David and Maligalis (2006), Tabumda (2006) and Reston and Bersales (2008) reported on the problems of teaching statistics in the Philippines: lack of good quality statistics books, lack of qualified teachers in statistics, inadequate facilities such as computer laboratories to aid in teaching statistics, teaching methods that do not enhance students' learning of statistics. Additional problems were identified during the teacher trainings of the Philippine Statistical Association: lack of recognition of statistics as an important course in their respective colleges, dearth of local reference materials that have passed the review of a panel of experts, teachers' need for more

hands-on practice on handling data, unavailability of statistical software in their colleges, lack of qualified statistician as member in research/thesis advisory committee.

In the 2009 Annual Conference of the Philippine Statistical Association, a roundtable discussion with teachers of statistics in college was done to determine the problems they encounter in teaching statistics. The following participated:

- 54 participants, mainly teaching basic statistics in college, representing 25 institutions
  - 20 degree-granting academic institutions,2 government agencies, 2 PSA life members, 1 software provider
- 10 degree-granting institutions offering statistics degrees(from BS to PhD)- 5 from the Visayas, 4 from NCR/Luzon, 1 from Mindanao
- 3 degree-granting institutions offering degree programs related to Statistics.

They identified the following problems:

1. On the subject they teach
   a. Different course names
   b. Usually descriptive statistics ; does not cover inferential statistics
   c. But serves as preparatory course for thesis writing
   d. Could not cover inference because some teachers are not equipped to teach the topic.
2. On the teachers
   a. No formal training in statistics
   b. Some cannot attend training due to lack of funds/support
   c. There are teachers with statistics degree but cannot handle all stat courses offered
   d. Cannot cope with demand for a statistician in the thesis panel.
3. On other areas
   a. Quality and lack of students enrolling in stat degree programs
   b. Use of software in teaching
   c. High cost of software license
   d. Reference materials/books
   e. Locally authored books need to be corrected /enhanced.

They offered the following solutions:

1. Short term solutions
   a. Team teaching
   b. Short courses for teachers teaching statistics(certification or diploma course)
   c. Removal of thesis requirement for undergraduate students.
2. Long Term
   a. Statistics subject as part of high school curriculum
   b. Look into statistics courses of normal colleges
   c. Accreditation based on published papers in refereed journals
   d. Faculty development (scholarships for faculty to take MS/PhD).

THE FUTURE IS BRIGHT

Many reform efforts are being done by different stakeholders in the country. As mentioned earlier, the Philippine Statistical Association, the Philippine Statistical System, the Commission on Higher Education, the academic institutions themselves have identified the problems and have started reforms. These reforms are ongoing and the private sector are becoming involved. It is the hope of stakeholders that a golden age again happen for statistics education in the country.

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