Creative Education: A Way of Life!

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1. Introduction:

During the fifty-five years of its history, education in Pakistan has been predominantly textbook-oriented, promoting rote-memorization rather than a proper understanding and application of theoretical concepts (Habibullah, 1992). As far as the teaching of Statistics at the undergraduate and graduate levels is concerned, it cannot be considered *complete* unless the students are provided some opportunity to apply theoretical concepts to real-world situations, and some experience with the handling and analysis of real-life data. As such, it is of the utmost importance to promote in the students the spirit of *enquiry*, and to enable them to associate theoretical concepts with real-world problems.

In 1985, the author commenced a series of projects and programs aimed at the improvement of statistical education in Pakistan. A humble beginning restricted to the four walls of her college expanded in the years to come in *multifarious* directions, and, by the year 2000, the statistical activities of Kinnaird College had developed into a *combination* of activities including Workshops, Exhibitions and Competitions in the area of Statistics (Habibullah, 2001).

2. History:

Having a knack for Mathematics eversince early childhood, the author attained the Third position in order of merit in M.Sc. Statistics at the University of the Punjab, Lahore in 1979. In 1983, she proceeded to the University of Toronto in Canada in order to utilize the Pakistan government scholarship for another Masters in Statistics. The ten-month-long period of studies in Canada proved to be an *eye-opener* in the true sense of the word, and the author developed a *keen* awareness of the tremendous *gap* that existed between the teaching and learning of Statistics in the West and in her own country.

3. Sample Surveys:

It was not even one full year eversince her return from Canada in August, 1984 when the author invited her fourth-year students to carry out a small-scale statistical survey regarding the Future Plans of the Students of Kinnaird College regarding Higher Education, Career and Marriage. Without any readily available computer-facilities, the entire work pertaining to the analysis of the collected data was carried out *by hand*, and the various steps of the survey took a period of approximately six months, at the end of which, the results and conclusions were presented in front of a segment of the student-body and faculty of the college in the form of a Verbal Presentation cum Poster Exhibition. Encouraged by the *very positive* response of the audience, the author was motivated to *repeat* the exercise with the next batch of Statistics students, and, in this way, the first survey turned out to be the harbinger of an ongoing *series* of surveys to be carried out year after year. Most of these surveys have been on socio-cultural topics such as 'The Quality of the Relationship that Exists Between Parents and their Unmarried Daughters studying in the Degree Classes', 'Probing the Life of the Middle-Aged Working Mother', and 'Exploring the Lives of Female Nurses of Lahore (Pros and Cons of the Nursing Profession)'.

4. Statistical Competitions:

In August 1990, the author participated in the Third International Conference On Teaching Statistics (ICOTS-3), and was invited to be a member of the Panel of International Judges for the All New Zealand Schools Statistics Competition. In-depth study and evaluation of the two hundred or so colourful and attractive posters prepared by countrywide students of grades 5 and 6 turned out to be a horizon-widening experience, and the author decided to initiate a similar competition in her own country. The very first competition was launched in the city of Lahore in the autumn of 1990, and the next few years witnessed the *expansion* of the Kinnaird Inter-collegiate Statistical Competition to many different cities and towns of Pakistan, as well as its *development* in various ways: KISC 'Ordinary Level' invited students of various colleges to enter posters based on small-scale statistical studies whereas KISC 'Advanced Level' invited *teams* of teachers and students to carry out *full-fledged* sample surveys/research projects, and to present their findings in the form of comprehensive reports; as well, in the year 1997, the author and here team launched KISC 'Guided Level' — an innovative endeavour to train teachers of Statistics regarding the conduct of sample surveys within colleges (Habibullah, 1999b).

The year 1997-98 witnessed a *giant leap* with regard to the Kinnaird statistics competition, as this was the year when the scope of KISC "A Level" was expanded to include the *world-wide* community of students/young adults, and, the international competition was given the title "Data Analysis Talent Award (DATA)" (Habibullah, 2002).

5. Training Workshops:

By the year 1992, it had become quite *clear* to the author that not much progress could be expected with regard to the quality of project-work carried out by students unless and until the *teachers* acquired the skills necessary for being able to guide the students properly. As the teachers *themselves* were a product of the same stereotype educational system that had been there for decades, it was obvious that there was a need for training workshops aimed at consolidation of *theoretical* concepts as well as skill-development with regard to *application* of statistical techniques to real-life situations. The Statistics Teachers' Educational Program (STEP) was launched in September, 1992, and, what began with a two-hour-long meeting consisting of only a few local teachers, evolved into a *two-day-long* workshop attracting teachers, students and practitioners from various cities and towns of Pakistan (Habibullah, 1995). STEPs 1 to 10 were accomplished in a span of only four years from 1992 to 1996, and in 1997, the workshop was re-named to be called the Kinnaird College Statistics Forum for the Enlightenment of Students, Teachers, Innovators, Veterans, Amateurs and Learners (KC Statistics FESTIVAL) (Habibullah, 1999a).

6. Contributions in the Area of Curriculum Development:

Eversince 1987, the author has been an active member of various National Curriculum Revision Committees on Statistics, and has put forth a *variety* of useful suggestions and proposals based on her extensive experience with classroom-teaching as well as data-based studies. One of her important contributions in this area is the significant change that occurred in the F.A./F.Sc. Statistics syllabus in 1990/91 — when small-scale exercises involving collection and analysis of real data were included in the Practical component of the syllabus.

7. Contributions at the International Level:

Eversince 1990, the author has been presenting papers in national and international conferences in the area of Statistical Education. She has represented her country in all five continents, and has been an active participant in the discussions and deliberations of the ISI Sessions as well as the ICOTS, ICME and GASAT conferences. (ICME stands for the International Congress of Mathematics Education, and GASAT stands for the International Association of Gender And Science And Technology.) Ongoing participation in international meetings has not

only benefited the author but has also given her an opportunity to *share her own experiences* with representatives of the world-wide community of statistics educators.

In August 2001, the author was invited to act as member of the ISI Committee on Membership Expansion and Renewal, and contributed actively to the deliberations of the committee throughout the coming year.

7. Honours

On account of her contributions in the field of statistical education, the author received one national and two international awards between 1994 and 2001. In 1994, she won the *Third Prize* in an award scheme launched by the *Common-Wealth Association of Sciences, Technology and Mathematics Educators (CASTME)*; in 1999, she was awarded the *ISOSS/PSA Award* instituted by the National Organizing Committee of the Sixth Islamic Countries Conference on Statistical Science and the 12th National Seminar of the Pakistan Statistical Association; in 2001, she was awarded the *10th Star Award* (in the field of *Education*) by South Asia Publications, Pakistan.

In the year 2002, the author received the honour of being elected as Member of the International Statistical Institute.

8. A Latest Initiative:

December 2002 witnessed the commencement of *yet* another direction in the area of creative education! The author has been invited to conduct a course on Statistics and Probability for the students of Bachelor of Computer Science (BCS) enrolled in the newly launched Virtual University of Pakistan. (This is a *revolutionary* initiative of the Ministry of Science and Technology, Government of Pakistan, aimed at providing quality education to the *nation-wide* community of undergraduate students; all courses are conducted via television and the internet, and the scope of the program encompasses not only students belonging to various cities and towns of Pakistan, but also those living in various countries of the Middle-East, South-East Asia and neighbouring regions.

9. Future Directions:

The author has been working as the Head of the Statistics Department at her college for the past many years. With the advent of academic autonomy that has been *recently* granted to the college, the author aspires to begin Masters programs in statistical sciences, leading to M.Phil and Ph.D. studies in the years to come. In the first place, it is intended that a Masters program in *Biostatistics* be commenced, which, if it materializes, will be the first of its kind in Pakistan.

10. Concluding Remarks:

Working in an educational environment afflicted with major problems such as lethargy and indifference on the part of teachers, and passive acceptance of information leading to rote-memorization on the part of students, it is very easy to feel ineffective and powerless to bring bout any change. There are always *some* people, however, who *take the initiative* and work for the improvement of the system.

Exposure to a highly-developed system of education at the tertiary level in 1983-84 motivated the author to work for *improvement* with regard to the teaching and learning of Statistics at the undergraduate level, and loyalty of purpose, commitment and dedication to the cause of creative education paved the way for significant contributions and honours in the area of statistical education.

Fifteen years of continuous effort for the enhancement of statistical education at the undergraduate level in Pakistan have effected *some* change, and there now exists an *awareness* in the community of statistics teachers and students regarding the importance of small-scale statistical studies involving collection and analysis of real-life data. It goes without saying, however, that this

type of change is always a *slow* process, and consolidated efforts by all concerned are required to create a significant impact.

Strength of conviction, initiative and drive, and *consistent* hard work coupled with the ability to speak one's mind inspire *respect*, trust and confidence, and — if one is able to achieve *these* — nationality, ethnic background or gender create no *real* hindrances. A female educator from a developing country and a predominantly male-oriented society, one fine day in 2001, finds herself inducted in an important international committee of the ISI, thus being able to contribute positively for effecting change with regard to policy-formulation of the *largest* world-body of professional statisticians!

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RÉSUMÉ

Pendant les anquante-ang années de son histoire, l'education au Pakistan a été principalement manueal orienté, encourageant à apprendre par coeur au lieu de la compréhension et l'application de concepts théoriques. Contact avec le systéme d'éducation occidentale au niveau tertiaire en 1983-84 a erouvé d'être une véritable révélation, et a motivé l'auteur de lancer des efforts pour l'enseignement orienté vers l'application et l'apprentissage de statistiques préliminaire, dès son retour au Pakistan. Loyauté au but, attachement et dévouement à la cause dune éducation créative a emmené vers une séries de projecs et de programs paur l'accroisseement d'éducation de statistiques au Pakistan. Ceux-ci comprennent des sondages sur une variété de sujets, des expositions statistiques et des concurrences pour les étudiants, et une séries d'ateliers pour les enseignants et les maîtres assistants de statistiques travaillant dans des lycées et des universités différentes du pays. Une participation enthousiste dans les réunions du comité de la révision du programme national a apporté un changement positif pour les étudiants de statistiques du premier et dèuxieme cycle. Une participation active aux plusieurs conferences nationaux et internationaux n'a pas seulement été utile à l'auteur mais lui a donné aussi l'occasion de partager ses tropres expériences avec les representatifs de la communauté mondiale d'enseigneurs de statistiques. Le qualités de détérmination, initiative et un constant travail dur s'ajoutant à la capacité de sexprimer inspirent du respect et de la confiance, et --- si l'on est capable d'attendre ces qualités --- la nationalité, le milieu éthnique ou le sexe ne présentent pas de vraies entraves. Une éducatriece d'un pays en voie de développment et princapalement mâle orienté, un jour en 2001, se trouve admise dans un important comité internationale d'ISI, ainsi étant capable d'apporter un changement en ce qui concerne la formulation de politique de la plus grande organisation des statisticiens professionels.