

The ASA Section on Statistical Education: An Updated History with Emphasis on its Last 25 Years

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Abstract

In 1990, Inman published a history of the Statistical Education Section from its inception in 1944 until 1989 in *The American Statistician*. This paper updates his narrative of the history with an emphasis on its last 25 years. Information about the section's leaders and committees will be presented, as well as the services provided by the section, such as meetings and publications. It describes its awards and its support to students and sister organizations. The paper summarizes the section's role in the creation of the ASA Division of Education, the appointment of an ASA Director of Education, and the establishment of committees that support the work of statistics educators in mathematics departments in four-year colleges and universities, in two-year colleges, and in schools. Additionally, the ASA has made recommendations on course requirements for undergraduate statistics majors and guidelines for assessment and instruction in statistics education in K-12 and in the first-year of college (the GAISE reports) with the section's support. The paper concludes with continuing and new challenges, along with future opportunities, for the Statistical Education Section.

Keywords

Awards; GAISE; Guidelines; Leadership; Meetings; Publications

Overview of Early History

In April, 1944, the ASA Board of Directors, under ASA president Helen M. Walker, established the Committee on the Training of Statisticians. A subsequent committee, to consider the standing, training, and function of statisticians, was formed in December, 1944. Finally, in 1948, the Section on Statistical Training, chaired by W. Allen Wallis, was established. At the instigation of Bob Hogg, in 1974, the Section's name was changed to become the Section on Statistics Education.

Chapter Policies

The current policies of the section are spelled out in their 2012 charter. The charter states that the Section is broadly interested in the effective use of education as a means for: (1) Improving the quality of existing applications of statistics and (2) Increasing the use of statistics in those areas of study where statistics offers the most efficient procedure for attacking unsolved problems.

The Section recognizes that education in statistics can be obtained either "on the job" or in educational institutions. In fact, the Section distinguishes four levels of statistical education: (1) Education of individuals who will not necessarily use statistical methods professionally but who should at least appreciate the nature of good statistical inquiries and summaries; (2) Education of individuals working in a subject-matter field other than statistics to the point where they can evaluate the application of recognized statistical methods reported in their professional literature and can make use of statistical techniques in their own work; (3) Education of individuals working in a subject-matter field other than statistics to the point where they can creatively apply statistical

techniques to work in the field; and (4) Education of individuals who wish to pursue careers as statisticians

The Section on Statistical Education will engage in activities appropriate to the pursuit of the goals set forth above including, but not limited to the following activities: (1) dissemination of information by providing members with information on short courses, standard training programs, bibliography (textbooks, monographs, etc.), teaching aids, and new developments in statistical education; (2) organization of programs such as meetings of national societies and summer seminars or workshops for teachers; and (3) Cooperation with other sections and societies through advice to committees of other sections or societies and cooperation with other committees and societies on problems in education.

Section Membership

Membership in the Section includes all full members of the Association who pay dues to the Section. Table 1 gives the section membership counts for selected years between 1989 and 2014. It is worth noting that the section membership in 1989 represented approximately 32 percent of the total ASA membership but by 2014 the Section membership was only about 6 percent of total ASA membership. This percentage change was largely due to two Section subsections, Statistical Consulting and Teaching of Statistics in the Health Sciences, becoming sections.

Table 1: Membership in the Section on Statistics Education

Year	Month	Count
1989	Unknown	1536
1998	December	884
2000	December	917
2005	December	1143
2010	December	1194
2014	June	

Table 2 shows the current membership in the Executive committee of the Statistics Education Section.

Table 2: 2014 Executive Committee

Chair	James H. Albert	Bowling Green State Univ.
Past-Chair	Deborah Nolan	UC Berkeley
Chair-Elect	William Notz	The Ohio State Univ.
Vice-Chair	Thomas Short	John Carroll Univ.
Secretary/Treasurer	Dexter Whittinghill	Roan Univ.
Program Chair:	Ming-Wen An	Vassar College
Program Chair-Elect:	Erin Blankenship	Univ. of Nebraska
Publications Officer	Jennifer Kaplan	Univ. of Georgia
Council of Chapters Representative	Paul Roback	Saint Olaf College
Council of Chapters Representative	Chad Schafer	CMU
Education Council Liaison	Roxy Peck	Cal Poly

Member at Large	Brigitte Baldi	UC Irvine
Member at Large	Amy Froelich	Iowa State Univ.
Member at Large	Tim Jacobbe	Univ. of Florida
Member at Large	Kari Lock Morgan	Penn. State Univ.
Member at Large	Herle McGowan	NCSU
Member at Large	Nathan Tintle	Dort College
Staff Liaison	Rick Peterson	ASA

Note that the Section leadership includes members of institutions ranging from small liberal arts colleges to large research universities.

Table 3 lists the section chairmen between 1989 and 2010, and it gives the names of the chairs-elect for both 2015 and 2016.

Table 3: Section Chairs 1989 – 2010 and Chairs Elect

		Chairs Elect
1989 Paul Minton	2002 Jeff Witmer	2015 William Notz
1990 George Milliken	2003 Joan Garfield	2016 Nicholas Horton
1991 Robert Stephenson	2004 Ron Wasserstein	
1992 Richard Schaeffer	2005 Robin Lock	
1993 James Landwehr	2006 Christine Franklin	
1994 John Boyer	2007 Jessica Utts	
1995 Thomas Moore	2008 Linda Young	
1996 Mary Parker	2009 Robert delMas	
1997 Jacquelin Dietz	2010 Lori Thombs	
1998 Rosemary Roberts	2011 Robert Gould	
1999 Christine McLaren	2012 Bradley Hartlaub	
2000 Roxy Peck	2012 Deborah Nolan	
2001 Allan Rossman	2014 James Albert	

Two Section Chairs, Richard Schaeffer and Jessica Utts, have been elected president of the Association. Another, Ron Wasserstein, is the current ASA Executive Director.

Section Activities

Committees

The section has only three Standing Committees. These include: the Committee on Nominations, which plans ballot for new section officers; the Committee to Nominate Fellows, which proposes candidates for ASA Fellows, and the Charter Committee, which meets every three years to review the section's charter.

Publications

The Section provides several publications to inform its members of current events and research in statistics education. These have included, regular articles in *AmStat News* that inform members of Section activities, preview JSM sessions, and describe grants and awards earned by section members. A Section newsletter was started in 1995 by the inaugural editors: Tom Moore, Carol Bloomberg, and Joan Garfield. Initially, the Section produced three issues each year, but over time the number of issues declined, and as the website and listserv were more fully developed the newsletter was abandoned. The JSM Proceedings provide a record of the presentations made by Section members at invited and contributed session. Additional publications supported by the Section or by individual Section members have included: the JSE started by Jackie Dietz in 1992 at NC

State; *STATS*, *Significance*, and *Chance* magazines; the Statistics Teacher Network newsletter started in 1994 for K-12 teachers; the Statistics Education Website which provides statistics lesson plans appropriate for use in K-12 classrooms; the Guidelines for Assessment and Instruction in Statistics Education (GAISE) Reports which include both a Pre K – Grade 12 Report (2007) and a College Report (2010); as well as Curriculum Guidelines for undergraduate statistics programs. The Curriculum Guidelines are currently under revision (2014). They were previously revised in 2000.

Meetings and Short Courses

The section is very active at the annual JSM giving invited, topic and regular contributed sessions and poster sessions, and it participated in Winter Meetings in the early 1990s. The Section has also supported Quantitative Literacy (QL) Workshops held at colleges around the country and QL publications. Richard Schaeffer and James Landwehr helped to initiate these workshops in 1987, and many workshops were held in the early 1990s. Laurie Snell along with Peter Doyle, Tom Moore, Joan Garfield, and Bill Peterson started the *Chance* Workshops at Dartmouth in the early 1990s and produced a course based on statistics in the news media for undergraduates, a *Chance* Newsletter, and *Chance* Workshops, in 1997 and 1998, to help faculty develop *Chance* courses at their own colleges. A similar short course aimed at mathematics faculty who took on the teaching of statistics at colleges that did not have a resident statistician was the *STATS* Workshop which was funded by the NSF. Between 1993 and 1995 these were organized by George Cobb and Mary Parker. Allan Rossman and Tom Short renewed the grant for another couple of years. In 2001, ASA/NCTM Joint Committee chair Jim Matis, started the *Beyond AP Statistics (BAPS)* short course for experienced AP Statistics teachers. When Jim retired, Roxy Peck became the Program Chair for BAPS. The BAPS course consists of enrichment material just beyond the basic AP syllabus and it is offered to local AP teachers at JSM annually. In 2006, Martha Aliaga, then Director for Programs at ASA convened a group of willing volunteers from the Statistics Education Section to plan *MWM: Meeting Within a Meeting*, a workshop for K-12 teachers to be held annually at JSM for teachers in the local area of JSM. Katherine Halvorsen became the Program Chair for the first workshop in 2007 and has continued in that capacity through the present.

Awards

In 1998, Ron Wasserstein initiated the Best Contributed Paper in Statistic Education at the annual JSM. The section surprised and honored Ron by naming the award for him at JSM in 2013. The Waller Education Award was established in 2002 by a contribution from the Executive Director Ray Waller and his wife Caroline Waller, for innovation in the instruction of elementary statistics. Additionally, Ray and Caroline established the Waller Distinguished Teaching Career Award in 2013. In 2012, the Section honored Jackie Dietz, the inaugural editor of *JSE* by naming the *JSE* Best Paper award the Jackie Dietz *JSE* Best Paper Award. The Section website contains the list of award recipients.

Interfaces with Other Organizations

The Statistics Education Section is actively involved with the following organizations: the Mathematics Association of America (MAA), primarily through the MAA's Stat-Ed SIGMAA and through the ASA/MAA Joint Committee; the International Statistical Institute (ISI), through the IASE, established in 1991, and ICOTS, established 1982; the National Council of Teachers of Mathematics (NCTM) through the ASA/NCTM Committee, initiated by Fred Mosteller in 1967; the Consortium for the Advancement of Undergraduate Statistics Education (CAUSE), started by Dennis Pearl at The Ohio State

University in 2003; and the Isolated Statisticians (ISOSTAT) first chaired by Jeff Witmer at JSM in 1991 and initiated by Dexter Whittinghill at JMM in 1998.

CAUSE was supported by an ASA member initiative in 2002. Over 50% of such initiatives have been related to education, often proposed by members of the Section.

Table 4 lists some additional statistics education endeavors with significant involvement by Section members.

Table 4: Additional Education Activities with Section Involvement

Acronym	Name	Sponsors
ACQL	Advisory Committee on Quantitative Literacy	ASA
ACTE	Advisory Committee on Teacher Enhancement	ASA
CSE	Center for Statistics Education	ASA
INSPIRE	INSight into Statistical Practice, Instruction and Reasoning.	NSF project is a joint effort between ASA, Cal Poly and UCLA. Rob Gould and Roxy Peck, co-PI, 2003
LOCUS	Levels of Conceptual Understanding of Statistics	NSF funded project; T. Jacobbe, PI, 2013
MIUSE	Modern, Interdisciplinary, Undergraduate Statistics Education	NRC conference, 1993
MSMESB	Making Statistics More Effective in Schools of Business	H. Roberts, G. Easton, and G. Tiao, 1986 [Love & Hildebrand, 2002]
PR/ISM	Planning Regional Isolated Statisticians Meetings (1997)	SLAW, 1997
SATS	Survey of Attitudes Toward Statistics	M. Bond and C. Schau, 2010
SEAQL	Science Education and Quantitative Literacy	ASA, 1997
SET	The Statistical Education of Teachers	ASA/NCTM Strategic Initiative, 2014
TEAMS	Teacher Education: Assessment, Methods, and Strategies	ASA sponsored conference, 2003
USEI	Undergraduate Statistics Education Initiative	R. Scheaffer, 2000 [Bryce, 2002]
$\mu\Sigma\rho$	Mu Sigma Rho, the student honor society in statistics	ASA

Section Challenges and Opportunities

Education faces many present and future challenges. Statistics education is affected by national trends in education, especially reduced funding for education at all levels, and we face additional challenges unique to the teaching of statistics. In particular statisticians need to reach out to and support efforts to teach K-12 teachers to teach statistics at the appropriate level for their students. We need to support statistics teaching at two-year colleges, in part by making teacher training and course materials available for these classes. We will need to assess the impact of the K-12 Common Core State

Standards for Mathematics (CCSSM) on the AP statistics course and on the college introductory statistics course as state education frameworks become better aligned with the CCSSM. A particularly unique challenge we face are the questions of when and how to introduce “Big Data” into the undergraduate curriculum. The question of whether to include Big Data in the curriculum is at this point moot. The consensus among many statisticians is that we must or risk becoming irrelevant. Finally, we need to assess the value of MOOCs, the massive open online courses now available for learning statistics on the internet. Henry Inman’s conclusion in 1990 (TAS, May 1990) applies even more urgently today: “Given the expanding general interest in statistical reasoning and the number of different organizations and individuals involved in these efforts, these exchanges of ideas and information constitute the most important function of the Section of Statistical Education today.”