Statistics Education Research Journal

STATISTICS EDUCATION RESEARCH JOURNAL

The *Statistics Education Research Journal* (*SERJ*) is a peer-reviewed electronic journal of the International Association for Statistical Education (IASE) and the International Statistical Institute (ISI). *SERJ* is published twice a year and is free.

SERJ aims to advance research-based knowledge that can help to improve the teaching, learning, and understanding of statistics or probability at all educational levels and in both formal (classroom-based) and informal (out-of-classroom) contexts. Such research may examine, for example, cognitive, motivational, attitudinal, curricular, teaching-related, technology-related, organizational, or societal factors and processes that are related to the development and understanding of stochastic knowledge. In addition, research may focus on how people use or apply statistical and probabilistic information and ideas, broadly viewed.

The *Journal* encourages the submission of quality papers related to the above goals, such as reports of original research (both quantitative and qualitative), integrative and critical reviews of research literature, analyses of research-based theoretical and methodological models, and other types of papers described in full in the Guidelines for Authors. All papers are reviewed internally by an Associate Editor or Editor, and are blind-reviewed by at least two external referees. Contributions in English are recommended. Contributions in French and Spanish will also be considered. A submitted paper must not have been published before or be under consideration for publication elsewhere.

Further information and guidelines for authors are available at: http://www.stat.auckland.ac.nz/serj

Submissions

Manuscripts must be submitted by email, as an attached Word document, to co-editor Robert delMas <delma001@umn.edu>. Submitted manuscripts should be produced using the Template file and in accordance with details in the Guidelines for Authors on the Journal's Web page: http://www.stat.auckland.ac.nz/serj

SERJ EDITORIAL BOARD

Editors

Robert delMas, Educational Psychology, University of Minnesota, 161 EdSciB, 56 East River Rd, Minneapolis, MN, 55455, USA. Email: delma001@umn.edu

Peter Petocz, Macquarie University, Sydney, North Ryde, New South Wales 2109, Australia Email: peter.petocz@mq.edu.au

Assistant Editor

Beth Chance, Department of Statistics, California Polytechnic State University, San Luis Obispo, California, 93407, USA. Email: bchance@calpoly.edu

Associate Editors

Andrej Blejec, National Institute of Biology, Vecna pot 111 POB 141, SI-1000 Ljubljana, Slovenia. Email: andrej.blejec@nib.si

Nick J. Broers, Department of Methodology and Statistics, Maastricht University, P.O. Box 616, 6200 MD, Maastricht, The Netherlands. Email: nick.broers@stat.unimaas.nl

Joan B. Garfield, Educational Psychology, University of Minnesota, 161 EdSciB, 56 East River Rd, Minneapolis, MN 55455, USA. Email: jbg@umn.edu

Randall E. Groth, Department of Education Specialties, Salisbury University, Salisbury, MD 21801, USA. E-mail: regroth@salisbury.edu

John Harraway, Department of Mathematics and Statistics, University of Otago, P.O.Box 56, Dunedin, New Zealand. Email: jharraway@maths.otago.ac.nz

Flavia Jolliffe, School of Mathematics, Statistics and Actuarial Science, University of Kent, Canterbury, Kent, CT2 7NF, United Kingdom. Email: F.Jolliffe@kent.ac.uk

Katie Makar, School of Education, University of Queensland, St. Lucia 4072, Queensland, Australia. Email: k.makar@uq.edu.au

M. Gabriella Ottaviani, Dipartimento di Statistica Probabilitá e Statistiche Applicate, Universitá degli Studi di Roma "La Sapienza", P.le Aldo Moro, 5, 00185, Rome, Italy. Email: Mariagabriella.ottaviani@uniroma1.it

Lionel Pereira-Mendoza, 3366 Drew Henry Drive, Osgoode, Ottawa K0A 2W0 Ontario Canada K0A 2W0. Email: lionel@iammendoza.com

Maxine Pfannkuch, Mathematics Education Unit, Department of Mathematics, The University of Auckland, Private Bag 92019, Auckland, New Zealand. Email: m.pfannkuch@auckland.ac.nz

Dave Pratt, Institute of Education, University of London, 20 Bedford Way, London WC1H 0AL. d.pratt@ioe.ac.uk

Christine Reading, SiMERR National Centre, Faculty of Education, Health and Professional Studies, University of New England, Armidale, NSW 2351, Australia. Email: creading@une.edu.au

Ernesto Sánchez, Departamento de Matematica Educativa, CINVESTAV-IPN, Av. Instituto Politecnico Nacional 2508, Col. San Pedro Zacatenco, 07360, Mexico D. F., Mexico. Email: esanchez@cinvestav.mx

Gilberte Schuyten, Faculty of Psychology and Educational Sciences, Ghent University, H. Dunantlaan 1, B-9000 Gent, Belgium. Email: Gilberte.Schuyten@UGent.be

Jane Watson, University of Tasmania, Private Bag 66, Hobart, Tasmania 7001, Australia. Email: Jane.Watson@utas.edu.au

TABLE OF CONTENTS

EDITORIAL

Welcome to the second issue of *SERJ* for 2011. We have three manuscripts in this issue, along with a letter to the editor.

The first article, handled by co-Editor Peter Petocz, grew out of a statistics education research seminar at the University of Minnesota (USA) taught by the three faculty (Andrew Zieffler, Joan Garfield, Robert delMas) with the four graduate students (Laura Le, Rebekah Isaak, Audbjorg Bjornsdottir, Jiyoon Park) as participants. The focus of the seminar was on the history and current state of research in statistics education, which led the group to explore articles published in *SERJ* from 2002 to 2009. The methodology used several frameworks, or "lenses," to carry out the investigation, two of which are content analysis and a typology of research studies from the Using Statistics Effectively in Mathematics Education Research report of the American Statistical Association that classifies studies into five types (Frame, Generate, Examine, Generalize, Extend). The result is a picture of statistics education research, as seen through these lenses, with respect to what is being published and why, who is publishing research in *SERJ*, the type of research questions, participants, and methodology that comprise statistics education research, and what this picture suggests about future research in this field.

The second article in this issue, by Clark Dollard (Metropolitan State College of Denver, USA), identifies misconceptions and gaps in understanding probability through individual interviews with a group of 24 preservice elementary education students that raises questions about the instructional experiences needed to prepare these students to effectively teach basic concepts of probability. I believe that in addition to the results of the study, readers will find Dollard's interview tasks and analysis framework informative and instructive with respect to conducting qualitative research in statistics education.

The final article, by Jennifer Noll (Portland State University, USA), looks at graduate teaching assistants' (TAs) understanding of concepts related to sampling variability in a sampling context. The study addresses the role of *Statistical Knowledge for Teaching* in the preparation of TAs. The participants consisted of 68 graduate students who had assisted with at least one introductory statistics course and completed at least one graduate-level course in statistics. Thoughy the TAs demonstrated good knowledge of theoretical probability distributions, they had difficulty applying this knowledge to two empirical sampling tasks. Interviews with three of the TAs were used to explore and elaborate the findings from the survey results. I was particularly interested in the way Noll motivated the theoretical framework, as well as the elucidation of the disconnect between the TAs' academic knowledge and their ability to apply that knowledge.

Finally, this issue includes what I believe is the first *Letter to the Editor* published in *SERJ*. *SERJ* welcomes letters to the editor that promote an open exchange of ideas. The co-editors of SERJ will review letters to assure they are respectful, pertinent to statistics education, and scholarly. In that vein, the letter from Anne Millar and Candace Schau provide a commentary on an article published in *SERJ* last May (volume 10, issue 1). I am sure that users of the *Survey of Attitudes Towards Statistics* (SATS) and those that conduct research in the affective domain will find the letter of interest.

ROBERT DELMAS