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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.

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EDITORIAL

Welcome to the first issue of *SERJ* for 2011.

In this issue, Michael Posner evaluates the use of an alternative form of assessment called the proficiency-based assessment and reassessment of learning outcomes (PARLO) system. The PARLO system illustrates the use of assessment to increase students' opportunities to learn course material. Key features of the research design are the use of a comparison class, a standardized assessment as an outcome measure in addition to a common course exam, and comparisons on both cognitive and non-cognitive outcomes.

The second article by Margret Hjalmarson, Tamara Moore, and Robert delMas introduces the use of an active instructional approach from the mathematics literature, called a model eliciting activity or MEA, to statistics education. Results from a mixed-methods analysis of both quantitative and qualitative data indicate that the engineering-based activity on "nanoroughness" presents a task that prompts students to design a sampling plan, use or design measures of center and variability, and integrate those measures into a model to solve the stated problem. The article also illustrates how MEAs provide information on students' statistical thinking and misunderstandings.

The third article by a group of researchers from the Katholieke Universiteit Leuven (Stijn Vanhoof, Sofie Kuppens, Ana Elisa Castro Sotos, Lieven Verschaffel and Patrick Onghena) takes a critical look at the structure of the Survey of Attitudes Toward Statistics (SATS) instrument. In contrast to previous work on the SATS, the research team conducted structural equations modeling analysis based on information for individual items rather than item parcels. The results offer some new perspectives on the structure of the SATS as well as information on the characteristics of individual items. The research also provides an excellent example of how to conduct confirmatory factor analysis through structural equations modeling.

In the final article, Susan Peters presents results from a qualitative study of secondary teachers' understanding of statistical variation. A thorough review of the literature on reasoning and thinking about statistical variation is used to develop a framework for capturing what Peters calls a "robust understanding of variation" in the thinking and reasoning of the secondary teachers. Key features of this research are the use of a purposeful sample of Advanced Placement® (AP) Statistics teacher-leaders, use of the Structure of the Observed Learning Outcome (SOLO) Model as the basis of the conceptual framework, and the design of a rich set of tasks for eliciting the teachers' reasoning and thinking. The resulting perspective on the understanding of statistical variation as a mixture of multiple perspectives with integrated relationships among the perspectives provides challenges for instruction on variation and for assessment of this conceptual understanding.

I thoroughly enjoyed reading these articles and found that each one challenged and added to my knowledge of statistical instruction and assessment. I hope you will find them equally of interest.

ROBERT DELMAS