EDITORIAL

Welcome to the first regular issue of *SERJ* for 2026! Although I have completed my term as Editor of Regular Papers for SERJ, the majority of articles in 2026 will likely be papers that I managed as Editor before we transition to papers managed by the current Editor, Daniel Frischemeier (University of Muenster, Germany). In his early days as Editor of Regular Papers, Daniel has added three new Associate Editors: Theresa Büchter (University of Kassel, Germany), Mathieu Thibault (Université du Québec, Canada), and Travis Weiland (University of North Carolina, Charlotte). Daniel and I thank them in advance for their willingness to volunteer for this important service to the field of statistics education research.

Daniel and I are also grateful to Stephanie Budgett and Anna Fergusson (both from the University of Auckland, New Zealand) for their work in putting together this issue of *SERJ* in their roles as Assistant Editor–Manuscripts and Assistant Editor–Technology, respectively. Since the publication of our last issue in 2025, Rolf Biehler (elected member, Paderborn University, Germany) and Alejandra Sorto (International Association for Statistical Education Executive Committee member, Texas State University, United States) have completed their terms on the *SERJ* Advisory Board. We thank them for their leadership and the insights they provided in advancing *SERJ*. Joining the Advisory Board are Rob Gould (elected member, University of California at Los Angeles, United States) and Mine Çetinkaya-Rundel (International Association for Statistical Education Executive Committee member, Duke University, United States). We look forward to working with them and benefiting from their considerable expertise.

This issue of SERJ contains four articles, one of which was managed by Daniel as guest editor due to a conflict of interest. In one article, Randall Groth considered the knowledge of those who teach statistics, arguing that teachers need to know both statistics content and how to teach the content in ways that all students can learn. Groth used the Structure of the Observed Learning Outcome (SOLO) model to create a taxonomy for researchers' conduct of research to study teachers' development of aspects of statistical knowledge for teaching. The taxonomy consisted of two cycles: one for subject matter knowledge and one for pedagogical content knowledge. Both cycles included unistructural, multistructural, and relational levels, depending on whether the research focus was on one component of the type of knowledge, two or three components, or use within the context of statistical investigation or teaching statistics, respectively. Groth operationalized the taxonomy using statistical knowledge for teaching research published in *SERJ* for all issues up to and including the first issue of 2025, comprising a total of 59 articles. He further described differences in articles classified at the same level for the same type of knowledge and articulated the difficulties associated with classifying articles at each level for each knowledge type. Through the development of this taxonomy, Groth provided a means for researchers to identify areas of statistical knowledge for teaching that could benefit from investigation, as well as a way for researchers to focus and frame their studies to investigate teachers' statistical knowledge for teaching.

In their article to investigate undergraduate students' reasoning about mode, Desi Rahmatina and Norasykin Mohd Zaid used a commognitive lens to provide new insights about how students compare modes among distributions of data for the same variable. In particular, they used a construct of routines (patterned ways of reasoning) to uncover inconsistencies in how students arrived at correct comparisons for some item types but incorrect comparisons in others. They observed three different outcomes among the three undergraduate students who participated in their study and who had displayed inconsistent routines in prior work. All three students could provide correct definitions for mode. One student reasoned consistently when data was presented in tabular form or as ordered lists, but applied a different routine when data was presented graphically as a dot plot. This student focused on the frequencies associated with the modal value and concluded that, for two distributions with the same mode, the distribution with the higher frequency had the higher modal value. A second student focused on modal frequencies to compare two distributions with the same mode regardless of representational form. The third student reasoned similarly to the second student but additionally identified a distribution that had two modal values tied for the largest frequency as having the largest mode. Rahmatina and Zaid's results suggest the importance of comparing distributions presented in different forms when considering students' reasoning about the mode.

Statistics Education Research Journal, 25(1). https://doi.org/10.52041/serj.1084
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Hyejin Jun and Kyeong-Hwa Lee worked with high school students to characterize students' investigative questions when working with secondary data and to consider how data visualizations might support the refinement of those questions. The authors conducted a case study of a seven-session sequence of activities involving nine 16–17-year-old male volunteers who engaged in an investigative cycle using the same large secondary dataset while learning about working with big data and analyzing data using CODAP. The researchers analyzed students' investigation reports and email interviews to examine students' initiating investigative questions (IIQs) and their analysis-phase investigative questions (AIQs). The data were analyzed using a framework that considered the number, type, and clarity of variables; population clarity; question intent; feasibility for drawing conclusions; and global perspective. Jun and Lee found that students posed more AIQs than IIQs and that their AIQs more often included clear, numerical variables. Population clarity was considerably more limited than variable clarity in students'questions. Students generated questions with a variety of intents that reflected a global view of data. With the exception of one student's questions, their AIQs were feasible for drawing conclusions, representing an improvement over IIQs that were equally split between feasible and not feasible. The researchers also identified episodes in which students' data visualizations appeared to support the refinement of questions by revealing distributional characteristics, including variability, and relationships in data. The study offers important insights into how students might be supported in refining investigative questions.

In a global examination of cognitive and non-cognitive measures, Jordan Veng Thang Oh, Damian P. Birney, and Michael Zhang conducted a systematic review of measures of statistical ability. They examined the components of these measures; their reliability and validity; and correlations between the measures and non-cognitive factors for the small number of studies that considered cognitive and non-cognitive constructs. The authors focused on what they identified as knowledge-based and skill-based abilities grounded in statistical literacy and reasoning, respectively, as well as specific statistical topics classified under descriptive statistics, inferential statistics, probability, and methodology. Their systematic review led to the inclusion of 51 papers representing a total of 25 unique measures. Most measures assessed knowledge-based competencies and revealed practically and statistically significant differences across statistical topics. Measures that included descriptive statistics tended to be knowledge-based; those that included probability topics tended to be skill-based. Reliability estimates were generally higher for knowledge-based measures but lower for skill-based measures. Validity evidence for the measures most commonly stemmed from expert evaluation and supported alignment with intended learning outcomes. In examining correlations between statistical ability measures and non-cognitive factors, the authors found that ability measures correlated with attitudes towards statistics, with coefficients generally exceeding .10, and were often significantly related to measures of self-efficacy. Their study highlights the need for additional measures assessing statistical reasoning and for greater attention to validity evidence in the design of such measures.

We hope *SERJ* readers enjoy this set of papers. Thanks, again, to the *SERJ* Editorial Team, Reviewers, and Authors for making this issue possible.

SUSAN A. PETERS
Immediate Past Editor