

## **Impact of experimenting computational statistics for data science in introductory statistics course: a Malaysian perspective**

### **ABSTRACT**

The conventional teaching methods for statistics, especially for introductory statistics course (precursor to data science) are not in accordance with the advancement and demand of today's data-centric world. As the backbone of modern data science, computational statistics is deemed to revamp the learning of statistics to a large extent. As such, this study investigated the impact of experimenting computational statistics for data science in introductory statistics course from a Malaysian perspective. We employed a pre-, postand delayed post-test quasi-experimental design in this study. Our sample included 100 randomly selected students enrolled in an introductory course in a Malaysian public university. Students were equally separated into computational (followed computational statistics approach in learning statistics) and conventional (followed only conventional approach in learning statistics) groups. Students in both groups were assessed at three stages: initial, medial and final, respectively. Their performance (assessment marks) was used to measure the effectiveness of computational statistics approach in the learning process of introductory statistics. Results attested that computational group students performed significantly better than the conventional group students in both medial and final assessments. Furthermore, computational group students showed greater improvement from initial to medial assessment and sustained their performance from medial to final assessment, indicating that their knowledge acquisition was effective in the computational statistics approach. Our findings implied that computational statistics approach in introductory statistics course exerted a positive impact on students' statistics learning and performance, leading towards effective knowledge and computing skills acquisition for data science.

**Keyword:** Computational statistics; Data science; Introductory statistics; Statistics learning and performance