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Impact of a spreadsheet exploration on secondary school students' understanding of statistical graphs.

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Summary: This case study investigated the impact of a spreadsheet (EXCEL) exploration on the understanding of statistical graphs among twenty Singapore secondary school students of average ability. Four EXCEL templates were constructed to allow students to explore four aspects of statistical graphs: zero in scale, effect of different scales, size pictogram, and cumulative line graph. The exploration was guided with questions and interactive feedback embedded in the templates. The students worked in pairs and took a pre and posttest about statistical graphs. Pair discussion, field notes, and online entries captured by macros were analyzed, resulting in the identification of an isolated approach and a relational approach used by these students in their EXCEL exploration. Three quarters of the students showed gain scores in the posttest, suggesting positive impacts of this exploration on students' understanding of statistical graphs. The findings suggest further effort to extend the use of spreadsheet to other statistics and mathematics topics. Several areas for further research are discussed.

Classification: K43 R23

Keywords: descriptive statistics; spread sheets; grade 8; grade 9; teaching-learning processes; educational research; statistical graphs