GPA

Evidence in Action

A K20 Center Research Brief

Mathematics Achievement With Scientific Calculators

Fatimah Salihah Radzuan, Nurzatulshima Kamarudin, Mas Nida Md Khambari, and Nurazidawati Mohamad Arsad

2021

Introduction

This intervention brief explores the impact of scientific calculators on mathematics achievement among low-achieving students. The research article by Radzuan et al. (2021) investigates how scientific calculators can support problem-solving instructions and improve mathematics performance. The authors review literature on the historical use of calculators in education, the debate surrounding their appropriateness, and the benefits they offer in enhancing students' understanding and problem-solving skills. The significance of this research lies in addressing the challenges faced by low-achieving students and providing evidence-based strategies to improve their mathematics achievement.

Methodology

Research Design:

The study employs a pretest-posttest quasi-experimental design with two groups: an experimental group using scientific calculators and a control group using conventional methods.

Sample:

The participants were 49 Form Two students from a secondary school in Kajang, Selangor, Malaysia, selected based on their previous mathematics examination results of less than 50 marks.

Data Analysis:

The data were analyzed using ANCOVA to compare the post-test results while controlling for pretest scores. Descriptive statistics were used to represent participants' demographics, and the assumptions of ANCOVA were tested for normality, homogeneity of variances, and regression slopes.

Results

The study found a significant positive difference in mathematics achievement in favor of the experimental group using scientific calculators. The mean post-test scores of the experimental group were significantly higher than those of the control group. The use of scientific calculators helped students improve their problem-solving skills and overall mathematics performance. No

significant interaction was noted between group and gender, indicating that the intervention was equally effective for both boys and girls.

Application into Practice

To replicate this intervention, schools can:

1. **Integrate Scientific Calculators:** Provide scientific calculators for students to use during mathematics lessons, particularly for topics like solid geometry and statistics.
2. **Teacher Training:** Train teachers on how to effectively incorporate scientific calculators into their teaching methods.
3. **Structured Lessons:** Develop lesson plans that include instructions on using scientific calculators to solve mathematical problems.
4. **Monitor Progress:** Use pretest and post-test assessments to monitor students' progress and adjust teaching strategies accordingly.
5. **Encourage Reflection:** Promote reflective practices where students analyze their problem-solving processes and outcomes.

Work Cited

Radzuan, F. S., Kamarudin, N., Khambari, M. N. M., & Arsad, N. M. (2021). Impact of scientific calculators in mathematics among low-achieving students in a secondary school in Kajang, Selangor. *Pertanika Journal of Social Sciences & Humanities*, 29(S1), 199-214. https://doi.org/10.47836/pjssh.29.S1.11