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CHANGES IN STUDENTS' PROBLEM-SOLVING SKILLS: THE ROLE OF A FOCUSED TEACHING INTERVENTION BASED ON SEQUENTIAL MULTIPLE REPRESENTATIONS

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This study was set to investigate the role of Sequential Multiple Representations in Enhancing Senior Secondary School Physics Students' Problem-Solving Skills in the context of a tightly focused teaching intervention. The intervention involved a sequence of four lessons conducted over a period of 6 weeks, with the first and last week used for pre and post-test. The intervention was set deliberately to push students to use multiple representations in a particular sequence (starting from word to symbols, diagram, and then generating equations) to solve electric circuit problems. The population of the study comprised of all students offering physics in the fifteen public senior secondary schools in Bauchi state, Nigeria. Simple random sampling technique was used to select two schools and 80 students constituted the sample size. Forty (40) students were assigned to the intervention (experimental) group and 40 students to the non-intervention (control) group. The instrument used for data collection was a Physics Problem-Solving Task on Electric Circuit (PPSTEC) with a reliability coefficient of 0.76. An assessment rubric was developed by the researcher with four (4) levels of attainment of problem-solving skills (No attempt, Problematic, emergent and exemplary). The rubric was used as an analytical tool that characterized, assessed and ascertained the changes in students' problem-solving skills before and after the teaching intervention. The result shows that the intervention group made substantial improvement from about 89.75% at the level of no attempt and problematic response in the pre-test to 74.50% moved to the higher levels of emergent and exemplary. Based on the finding, it was concluded that the use of sequential multiple representations as a teaching strategy is an effective tool for enhancing students' problem-solving skills in the context of electric circuit problems. We therefore recommend for further research with different sets of students, and in different context across Nigeria to provide more empirical evidence on the role of sequential multiple representations as a means of developing students' problem solving skills in electric circuit problems.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

PhD

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