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Enhancing Science Learning through Inquirybased-Based Approaches in Western Cape Secondary Schools

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Abstract

This study examines the effect of inquiry-based teaching methods on learner engagement and achievement in science subjects at selected secondary schools in the Western Cape Province of South Africa. The research addresses persistent challenges such as low learner motivation, inadequate practical exposure, and underperformance in science assessments. A mixed-methods approach was employed, combining quantitative surveys and pre- and post-tests with qualitative interviews and classroom observations. The study sampled 120 Grade 9 learners and 10 science teachers from five under-resourced schools across both urban and rural districts.

Findings reveal that learners exposed to inquiry-based strategies demonstrated a 25% improvement in test scores and exhibited greater interest in scientific concepts compared to those taught using traditional lecture-based methods. Teachers reported increased classroom participation and improved conceptual understanding among students. However, challenges such as limited laboratory equipment and insufficient teacher training were noted.

The study recommends the integration of structured inquiry-based science curricula, teacher professional development workshops, and increased investment in laboratory infrastructure. Strengthening partnerships between schools, provincial education departments, and local universities could further support the adoption of innovative teaching methodologies. This research contributes to the growing body of evidence supporting learner-centred approaches in enhancing science education outcomes in developing regions.

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