# Promoting Scientific Thinking through Problembased-Based Learning in Grade 9 Natural Sciences Classrooms in Gauteng, South Africa

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## Abstract

Despite policy efforts to improve science education in South Africa, many Grade 9 learners in Gauteng continue to struggle with scientific reasoning and problem-solving skills. This study investigates how Problem-Based Learning (PBL) can enhance scientific thinking and classroom participation in Natural Sciences. The main issue identified is the overemphasis on memorisation rather than the development of analytical and inquiry skills in everyday teaching practices.

A qualitative research design was adopted, using focus group discussions, document analysis, and semi-structured interviews to collect in-depth data. The study involved 3 public secondary schools, with a total sample of 45 Grade 9 learners and 3 Natural Sciences teachers selected through purposive sampling. Results revealed that PBL encouraged learners to apply scientific concepts to real-world issues, improved collaboration, and increased confidence in expressing scientific ideas. Teachers reported a noticeable shift in learners' problem-solving abilities and engagement during lessons. However, they also cited challenges such as a lack of time for lesson planning and insufficient classroom resources to support active learning.

Based on the findings, it is recommended that the Department of Basic Education provide support for teacher collaboration groups to co-design PBL activities, include more real-world scenarios in the curriculum, and invest in school-based science resources. This approach could build a stronger foundation in scientific thinking and better prepare learners for senior secondary science courses.

**Keywords:** Collaboration, Curriculum, Inquiry, Reasoning, Resources