THE LABORATORY METHOD OF TEACHING: ENHANCING LEARNING THROUGH ACTIVE EXPLORATION AND EXPERIMENTATION

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The laboratory teaching method is a way of teaching that encourages students to explore and try to improve their learning actively. It uses practical demonstrations, hands-on tasks, and real-life examples to help students remember what they have learned (Silverman & Hudson, 2019). Universities need lab classes because they help students be creative, learn valuable skills, and think critically (Zhang & Guan, 2022). This method is beneficial in fields like physics, computer science, and psychology, where hands-on learning is important for understanding (Zhang & Guan, 2022). By engaging students in practical experiments, the laboratory method promotes a deeper understanding of complex concepts and cultivates important skills for future professional practice (Chu, 2023).

Many different areas have shown that the laboratory method works well for teaching. For example, the Laboratory Experiment Teaching Method has made it much easier for geology students to understand how science works (Mutende et al., 2019). In the same way, the Mathematics Laboratory Method has been shown to help students do better in math than standard teaching methods (Mwila et al., 2022). Also, using projects and modules to teach pharmaceutical microbiology lab courses has helped students improve their lab skills, ability to analyze data, and ability to think systematically about biology (Chu, 2023).

In reaction to the COVID-19 pandemic, teachers have investigated new teaching methods in the lab. Antrakusuma et al. (2021) say virtual labs have become an important way to improve science learning when students cannot get to real labs. Using online split classrooms with team-based learning has also made students more involved and motivated to learn in clinical laboratory classes (Feng et al., 2022). These modifications demonstrate the classroom method's adaptability and flexibility in many learning contexts.

Additionally, studies show that a mixed teaching method, including lecture-based and team-based learning, can improve students' practical skills and ability to solve lab problems (Ye, 2024). Teachers can employ various teaching techniques for students with diverse learning styles and interests to make the classroom more engaging and adaptable. According to Alzer (2023), video demos have also shown promise in improving students' learning and academic performance in blended learning.

The laboratory method of education is a dynamic and interactive way to learn that helps students understand and remember complex ideas. It helps with critical thinking, problem-solving, and using what the teacher has learned in real life by letting the learner actively explore and experiment. This piece talks about many different studies and ways of doing things that show how valuable and adaptable the laboratory method is in many fields and school settings. The laboratory method is still important in student-centered and experiential learning, even as teachers develop new ways to teach and adapt to new learning settings.

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