

## INTEGRATION OF INTERACTIVE TEACHING METHODS IN CHEMISTRY LESSONS: ENHANCING STUDENT MOTIVATION THROUGH INNOVATIVE APPROACHES

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Interactive teaching methods have revolutionized modern education, shifting the focus from passive learning to student-centered engagement. Chemistry, as a discipline that requires conceptual understanding and practical application, benefits significantly from interactive methodologies. This paper explores the implementation of innovative teaching strategies in chemistry education to enhance student motivation, comprehension, and retention. By incorporating technology, hands-on experiments, and collaborative learning approaches, educators can foster an environment that stimulates curiosity and critical thinking. The study also discusses the impact of these methods on student performance and overall academic success [1].

Traditional methods of teaching chemistry often rely on lecture-based instruction, which may not effectively engage all students. Given the abstract nature of many chemical concepts, students often struggle with comprehension and practical application. The adoption of interactive teaching methodologies presents a solution to this challenge, making learning more dynamic, participatory, and effective. This research aims to evaluate the role of interactive teaching techniques in chemistry lessons, focusing on their influence on student motivation. The study examines approaches such as project-based learning, gamification, digital simulations, peer collaboration, and inquiry-based instruction, assessing their effectiveness in fostering a deeper understanding of chemistry.

**Theoretical Framework**-The study is grounded in constructivist learning theory, which emphasizes the active participation of students in the learning process. According to Piaget's and Vygotsky's educational models, knowledge is best acquired through interaction, exploration, and problem-solving. By applying these principles in chemistry education, students can develop a more profound and lasting understanding of scientific concepts [3].

**Inquiry-Based Learning and Problem-Solving Approaches**-Inquiry-based learning encourages students to ask questions, conduct experiments, and draw conclusions through direct engagement with scientific concepts. This method promotes critical thinking and problem-solving skills, as students take an active role in their education by investigating real-world applications of chemistry.

**Collaborative Learning and Peer Interaction**-Group projects and peer discussions facilitate cooperative learning, enabling students to learn from each other's perspectives. Collaborative activities, such as team-based experiments and case studies, not only reinforce chemistry knowledge but also help develop essential communication and teamwork skills [4].

Interactive teaching methods in chemistry education have the potential to transform learning experiences, making scientific concepts more engaging, understandable, and applicable. By integrating gamification, inquiry-based learning, collaborative activities, and hands-on experiments, educators can create an enriched learning environment that fosters curiosity, creativity, and critical thinking. Future research should explore the long-term impact of these strategies on academic performance and career choices in STEM fields [2].

### References

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