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DEVELOPMENT AND USE OF LIFE-ORIENTED TASKS IN CHEMISTRY LESSONS TO IMPROVE LEARNING EFFECTIVENESS

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Abstract

Modern education requires teaching methods that connect theoretical knowledge with real-life situations. In chemistry education, life-oriented tasks play an important role in helping students understand how chemical concepts apply to everyday life. This article examines the importance of developing and implementing life-oriented tasks in chemistry lessons to improve students' motivation, understanding, and learning outcomes. The study highlights the pedagogical value of contextual learning and demonstrates how real-world problem-solving tasks enhance the effectiveness of chemistry education.

Keywords

chemistry education, life-oriented tasks, contextual learning, teaching methods, problem-based learning, student motivation, practical chemistry

Introduction

Chemistry is often perceived by students as a difficult and abstract subject because many chemical concepts are presented theoretically without clear connections to everyday life. As a result, students may lose interest and motivation in learning the subject. Modern educational approaches emphasize the importance of connecting academic knowledge with real-life experiences.

Life-oriented tasks are educational problems based on real-world situations that require the application of scientific knowledge. In chemistry lessons, such tasks help students understand how chemical principles are used in daily life, industry, medicine, and environmental protection. By integrating real-life contexts into learning activities, teachers can improve students' cognitive engagement and develop critical thinking skills.

The purpose of this article is to analyze the role of life-oriented tasks in chemistry education and to explore their impact on improving the effectiveness of the learning process.

Literature Review

Many researchers emphasize the importance of contextual and problem-based learning in science education. According to Gilbert (2006), contextual learning helps students understand scientific knowledge by connecting it with real-life situations. Bennett and Lubben (2006) also state that context-based chemistry education increases students' motivation and improves conceptual understanding.

Research conducted by Holbrook and Rannikmäe (2010) suggests that life-related chemistry tasks help students develop scientific literacy and problem-solving skills. These tasks allow

learners to analyze real problems such as environmental pollution, food chemistry, and chemical processes in everyday products.

Other studies highlight that integrating real-life problems into chemistry teaching encourages active learning and helps students apply theoretical knowledge in practical situations. Therefore, life-oriented tasks are considered an effective pedagogical tool in modern science education.

Methods

The research is based on the analysis of scientific literature on chemistry education and modern pedagogical methods. Various educational approaches related to contextual learning, problem-based learning, and student-centered teaching strategies were reviewed.

Examples of life-oriented chemistry tasks used in secondary school lessons were also analyzed to determine their effectiveness in improving student engagement and understanding. The study focused on identifying teaching practices that connect chemical concepts with everyday phenomena such as food preservation, household chemicals, environmental protection, and medical applications.

Results

The analysis shows that the use of life-oriented tasks in chemistry lessons significantly improves students' learning outcomes. First, such tasks increase students' motivation because they demonstrate the practical relevance of chemistry in daily life. When students see how chemistry explains common phenomena, they become more interested in the subject.

Second, life-oriented tasks help students develop analytical and critical thinking skills. Solving real-world problems requires students to apply theoretical knowledge, analyze information, and make logical conclusions.

Third, contextual tasks support deeper conceptual understanding. Instead of memorizing formulas or definitions, students learn how chemical principles operate in real situations such as water purification, food additives, or environmental pollution.

Finally, these tasks promote collaborative learning. Students often work in groups to discuss possible solutions to real-life problems, which improves communication and teamwork skills.

Conclusion

The analysis of scientific literature shows that the development and implementation of life-oriented tasks in chemistry education play a significant role in improving the effectiveness of the learning process. Traditional teaching methods often focus mainly on theoretical explanations, which may make chemistry appear abstract and difficult for many students. However, integrating real-life contexts into chemistry lessons helps bridge the gap between theory and practical application, making learning more meaningful and engaging.

Life-oriented tasks allow students to understand how chemical concepts are connected to everyday phenomena such as food preservation, environmental protection, household chemicals, medicine, and industrial processes. When students see the relevance of chemistry in their daily lives, their motivation to learn increases. This approach encourages curiosity, active participation, and a deeper interest in scientific knowledge.

Another important advantage of life-oriented tasks is the development of critical thinking and problem-solving skills. Students are required not only to recall theoretical knowledge but also to apply it to real situations, analyze information, and propose possible solutions. Such activities promote independent thinking, analytical reasoning, and scientific literacy, which are essential competencies in modern education.

Furthermore, the use of contextual tasks supports collaborative learning. Many life-based problems can be solved through group discussions, experiments, and project-based activities. This helps students improve communication skills, teamwork abilities, and confidence in expressing their ideas. In addition, teachers can use such tasks to integrate interdisciplinary knowledge from biology, physics, environmental science, and technology.

The literature also suggests that life-oriented tasks contribute to deeper conceptual understanding. Instead of memorizing chemical formulas or reactions mechanically, students learn to interpret chemical processes that occur in real life. This leads to long-term retention of knowledge and better academic performance.

In conclusion, the development and use of life-oriented tasks in chemistry lessons represent an effective pedagogical strategy for modern science education. Such tasks enhance students' motivation, improve conceptual understanding, and foster essential skills such as critical thinking, problem-solving, and collaboration. Therefore, educators are encouraged to incorporate more contextual and real-world problems into chemistry teaching in order to make the learning process more effective, relevant, and engaging for students. Future research may focus on designing innovative teaching materials and evaluating the long-term impact of life-oriented tasks on students' scientific literacy and academic achievement.

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