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**SPECIFIC METHODS OF ORGANIZING INTEGRATED PHYSICS AND CHEMISTRY
LABORATORY ACTIVITIES**

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Abstract: This article discusses the natural interrelation between the sciences of physics and chemistry. While physics studies the motion and properties of matter and energy, chemistry investigates the composition, structure, and reactions of matter. Due to these complementary focuses, many processes involve overlapping principles from both disciplines. The article highlights the importance of integrating these subjects in laboratory sessions.

Аннотация: В статье подчеркивается тот факт, что физика и химия являются по своей сути родственными областями: физика – это наука, изучающая движение и свойства материя и энергии, а химия – структуру и реакции материи, поэтому законы этих наук пересекаются во многих процессах.

Annotatsiya: Ushbu maqolada Fizika va kimyo fanlari tabiatan bir-biriga yaqin sohalar ekanligi, fizika modda va energiyaning harakatini, xususiyatlarini o'rganadigan fan bo'lsa, kimyo moddaning tarkibini, tuzilishi va reaksiyalarini tadqiq etadi va shu sababli, ko'plab jarayonlarda bu fanlarning qonuniyatlari kesishi yoritilgan

Keywords: Integration, processes and phenomena, laboratory activities, matter and energy, integrative method, knowledge and skills.

Modern education, the integrated teaching of sciences-especially during laboratory activities-plays a crucial role in developing students' practical skills and increasing their interest in scientific subjects. Physics and chemistry are closely interlinked disciplines; many scientific processes and phenomena are studied jointly within both fields. In this context, organizing laboratory activities in an integrated manner requires the application of specific methodologies.

Physics and chemistry are naturally related sciences. While physics deals with the motion and properties of matter and energy, chemistry studies the composition, structure, and reactions of matter. As a result, the laws of these sciences often intersect in various processes. For example, the laws of thermodynamics are fundamental to both physics and chemistry. Therefore, integrated laboratory activities provide students the opportunity to test theoretical knowledge from both fields in practice.

There are several distinctive advantages to organizing laboratory sessions in an integrated manner, including:

- **Consolidation of knowledge:** Integrated activities help students connect theoretical knowledge from both disciplines.
- **Development of practical skills:** Applying techniques and methods from multiple disciplines enhances students' hands-on abilities.
- **Creative thinking and problem-solving:** Integrated tasks encourage students to think creatively and tackle complex problems.
- **Efficient use of resources:** Conducting laboratory work for both subjects in a single session saves time and equipment.

Methods for Organizing Integrated Laboratory Activities:

- **Topic unification:** Select similar or related topics from physics and chemistry and design joint laboratory tasks. For example, gas laws and the behavior of gases in chemical reactions. This method highlights the interrelation between physics and chemistry for each topic and includes a unified laboratory curriculum.
- **Interactive methods:** Group work, project-based learning, and problem-solving tasks in the laboratory help strengthen interdisciplinary connections.
- **Incorporation of experiments:** Observing and analyzing physical phenomena occurring during chemical reactions, such as boiling, melting, or heat exchange.
- **Use of technological tools:** Utilizing simulators and virtual laboratories to conduct joint physics and chemistry sessions.

-Practical experiences and examples [4]:

- *Heat measurement in reactions:* Measuring heat absorption or release during chemical reactions using physical instruments.
- *Gas laws and chemical reactions:* Studying gas volume changes in chemical reactions using the ideal gas laws.
- *Electrolysis and electrical energy:* Integrating the chemical process of electrolysis with the principles of electrical engineering.
- *Spectroscopy:* Analyzing chemical substances using physical spectroscopic techniques.

To successfully organize integrated physics and chemistry laboratory activities, collaboration between teachers of both subjects is essential. Additionally, special attention should be given to enhancing teachers' qualifications. This can be achieved by organizing specialized training sessions, seminars, and courses, facilitating methodological exchanges among teachers, and providing instruction on the use of modern laboratory equipment.

Conclusion

In conclusion, while organizing integrated laboratory sessions comes with challenges-such as lack of coordination among teachers, insufficient equipment, and difficulties in lesson planning-these issues can be addressed by developing methodological guides, improving teacher qualifications, and equipping school laboratories with modern tools. Integrating physics and chemistry laboratory activities is a crucial factor in enhancing the effectiveness of science education. This approach helps deepen students' knowledge and skills and fosters creative and logical thinking. In the future, the expansion of methodological and practical developments in interdisciplinary integration will contribute to further improving the quality of education.

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