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METHODOLOGY FOR PROFESSIONAL TRAINING OF FUTURE CHEMISTRY TEACHERS

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ANNOTATSIYA:

This article examines the methodology for training future chemistry teachers, focusing on the implementation of new pedagogical technologies such as interactive methods, didactic games, collaborative learning, and trial lessons. The study highlights the development of professional competencies and adaptation to global educational structures, as well as the use of innovative pedagogical technologies in teaching theoretical aspects of chemistry. Methods for preparing future chemistry teachers are presented, emphasizing the integration of modern educational approaches to enhance teaching effectiveness.

Introduction

In the Republic of Uzbekistan, improving the quality of education requires the professional training of chemistry teachers, enhancement of their methodological knowledge, and acquisition of sufficient skills and practical experience. All educational materials must align with state educational standards. The use of subject programs, curricula, chemistry-specific literature, and handouts for independent work is essential.

Providing methodological guidelines for future chemistry teachers is crucial for their professional development.

The Role of Chemistry Teachers in Modern Education

To effectively teach chemistry, future teachers must possess comprehensive knowledge and skills, including:

1. Mastery of chemical concepts and the ability to analyze and explain topics clearly and logically.
2. Proficiency in organizing lessons with varied pedagogical techniques.
3. Theoretical knowledge of the subject matter.
4. Practical skills and hands-on experience.
5. Competence in conducting laboratory experiments.
6. Effective use of handouts and supplementary materials during lessons.
7. Familiarity with innovative chemistry literature and resources.
8. Ability to organize and evaluate different forms of assessment, including oral examinations, written assignments, and tests.
9. Knowledge of innovative educational technologies applicable to chemistry teaching.
10. Skill in selecting and applying teaching methods appropriate to specific topics.
11. Competence in preparing students for chemistry olympiads through step-by-step guidance.
12. Ability to organize extracurricular activities and chemistry-related events.
13. Proficiency in chemical terminology, problem-solving, and example-based teaching.
14. Skills in designing simple and complex test items.

Future teachers who master these competencies will be well-equipped to teach chemistry in schools, vocational colleges, academic lyceums, and higher education institutions. Additionally, they should pursue professional development certifications, demonstrate proficiency in English and other foreign languages, and possess broad scientific, methodological, and ethical qualities.

Innovative Pedagogical Technologies in Chemistry Teaching

Modern pedagogical technologies play a significant role in shaping the professional competencies of future chemistry teachers. Key technologies include:

1. Modular Education – Dividing the curriculum into manageable units or blocks to facilitate systematic learning.

2. Problem-Based Learning – Encouraging independent problem-solving by presenting students with challenging scenarios.
3. Interactive Methods – Fostering creativity, inquisitiveness, and independent work through active engagement.
4. Didactic Games – Reinforcing learning materials, broadening perspectives, and enhancing creative thinking.
5. Collaborative Learning – Promoting effective cooperation among students and within the classroom.
6. Trial Lessons – Utilizing information technologies for assessments, written assignments, intermediate tests, and final evaluations.

The Case-Study Method in Chemistry Education

The case-study method is particularly valuable in chemistry teaching. Its significance lies in:

- Using new pedagogical technologies to present topics.
- Selecting appropriate teaching methods.
- Training students to analyze specific situations, work in groups, and think independently.
- Enhancing student knowledge through the application of educational technologies.

The case-study method, as an interactive approach, is widely favored by educators and learners alike. It focuses on developing intellectual and communicative abilities through collaborative problem-solving.

Implementation of Case-Study Methodology

The case-study method involves analyzing real or simulated problem-based situations to guide learners in identifying issues and exploring solution strategies. To effectively implement this method, students must:

- Possess theoretical knowledge supported by slides and demonstrations.
- Develop skills and competencies through video materials and practical experiments.
- Formulate key concepts through hands-on experience.

Conclusion

The professional training of future chemistry teachers requires a comprehensive approach integrating theoretical knowledge, practical skills, and innovative pedagogical technologies. By mastering modern teaching methods such as modular education, problem-based learning, interactive techniques, and case-study analysis, future educators can significantly enhance

the quality of chemistry instruction. The implementation of these methodologies will contribute to the development of highly competent chemistry teachers capable of meeting the demands of contemporary education.

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